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Effects of Information Technology on Financial Services Systems

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Foreword

In 1982, the House Committee on Banking, Finance, and Urban Affairs; the House Committee on Energy and Commerce (expressing the special interest of its Subcommittee on Telecommunications, Consumer Protection, and Finance); and the Senate Committee on Banking, Housing, and Urban Affairs requested OTA to assess the impacts of information processing and telecommunication technologies on financial service systems. This report presents the results of that work.

The effects of technology on the internal operations, the structure and the types of services offered by the financial service industry have been profound. Technology has been and continues to be both a motivator and facilitator of change in the financial service industry. The structure of the industry has changed significantly in recent years as firms not traditionally viewed as financial service providers have taken advantage of opportunities created by technology to enter the market. New technology-based services have emerged. These changes are the result of the interaction of technology with other forces such as overall economic conditions, societal pressures, and the legal/regulatory environment in which the financial service industry operates.

This report describes the technologies now and likely to be available to providers and users of financial services. It analyzes the present structure of the financial service industry, its service offerings, its relationships with users of financial services, and observable trends. Implications of possible future trends for industry structure, markets for financial services, and relationships between the industry and the legal/regulatory environment are explored.

For the purposes of this report, the financial service industry has been divided into three segments: 1) retail financial services, 2) the securities industry, and 3) wholesale financial services. We focus on the opportunities that may be created for consumers and problems they may encounter as the financial service industry continues to evolve. Policy questions likely to be of interest to Congress and alternatives that are available for dealing with them are identified and analyzed. Finally, alternative scenarios for the financial service industry of the future are offered.

In performing this assessment OTA relied heavily on published materials and on other information provided by a variety of persons and organizations. We are grateful for this support and assistance. Two workshops, one dealing with technology and industry trends, and the other with consumer issues, provided much valuable information. Members of the advisory panel were particularly helpful with their contributions. However, the contents of this report are the sole responsibility of OTA and do not necessarily represent the views of the members of the advisory panel or any of the others who have contributed.

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Chapter 1

Overview

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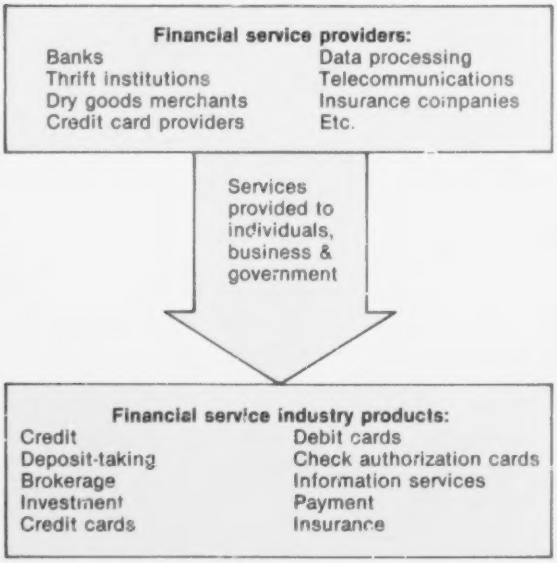
Chapter 1

Overview

This report focuses on the relationship between technology and change, both past and future, in the financial service industry. The roles of technology as both a motivator and a facilitator of change are analyzed. Other agents of change are considered only to the extent that they help define the market for new technology or its impact.

The financial service industry (see fig. 1) is markedly different from what it was at the end of the 1970's, and the rate of change will only slow slightly during the remainder of the 1980's. Advancing information and communication technologies are key factors that have changed the nature of financial services: the ways in which they are created, delivered, priced, received, and used. Relationships between and among users and providers of financial services are changing.

Figure 1.—Organizations Comprising the Financial Service Industry and Their Products


Financial service providers:
Banks
Thrift institutions
Dry goods merchants
Credit card providers
Data processing
Telecommunications
Insurance companies
Etc.
Services provided to individuals, business & government
Financial service industry products:
Credit
Deposit-taking
Brokerage
Investment
Credit cards
Debit cards
Check authorization cards
Information services
Payment
Insurance

SOURCE: Office of Technology Assessment

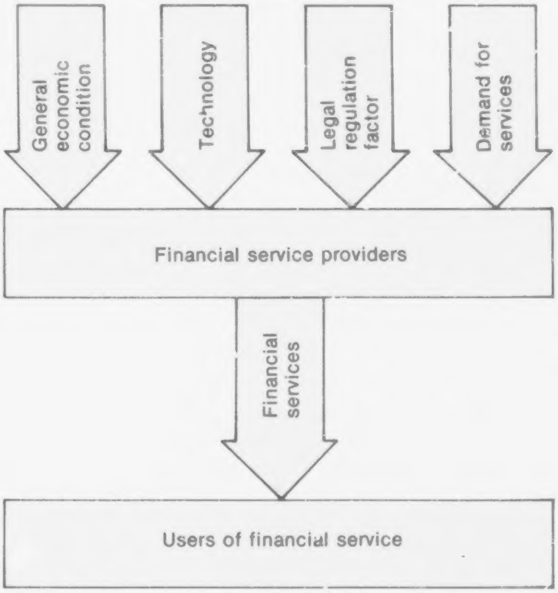
The existing legal/regulatory structure has roots that extend back 50 years; changes in the financial service industry have challenged some of its premises. Since the mid-1970's, Congress has devoted considerable attention to the financial service industry and has enacted several major pieces of legislation. Many of the regulations governing the industry are being relaxed. However, continued congressional attention is needed because not all of the salient issues have been resolved.

In the last few years, banks legally able to operate outside traditional banking regulation have appeared; retailers of food and general merchandise have emerged as major suppliers of financial services; changes in law and regulation have enabled banks, savings and loan associations, and credit unions to broaden the mix of services they offer and enter markets previously closed to them. At the same time, firms whose financial service offerings are virtually unregulated compete directly with traditional, regulated providers.

Information processing and communication technologies are being used to enhance existing services, to implement new ones, and to make them available in new ways. Money market mutual funds, operated by investment companies and securities broker/dealers, permit shareholders to redeem shares by writing the equivalent of a check. Banks, depending heavily on information processing and communication technologies, are beginning to offer securities through discount brokerage subsidiaries. Banks, credit unions, and savings and loan associations join networks of automated teller machines that enable account holders to obtain cash 24 hours a day from machines that are available nationwide. Both securities dealers and banks have developed systems that allow account holders with personal computers to transfer funds between accounts, pay bills, and order the purchase and sale of securities.

Observers consistently and correctly point to technology as a key factor responsible for the rapidity and magnitude of change in the financial service industry. However, other factors such as the legal/regulatory environment, general economic conditions, and the demands of users have also had significant impact on the industry (see fig. 2).

Figure 2.—Factors Affecting Financial Service Providers


General economic condition
Technology
Legal regulation factor
Demand for services
Financial service providers
Financial services
Users of financial service

SOURCE: Office of Technology Assessment

Major Findings

The changes that have taken place in the financial service industry affect a number of areas including industry structure, the legal/regulatory environment, financial service delivery systems, consumer interests, and the safety and soundness of the industry. Major findings in each of these areas are summarized below.

Industry Structure

- Rapid and dramatic change in the financial service industry will not persist indefinitely. There will be a period of stabilization, probably over the coming decade, after which the financial service industry is likely to return to a more orderly evolutionary pattern.
- Firms are in the process of broadening the scope of their service offerings, a trend that will continue during the coming decade. The future mix of financial services offered by each class of provider will be much different from what it is now. Some will offer the full range of financial service including taking deposits, extending credit, underwriting insurance and securities offerings, and securities brokerage. Others will target narrowly defined markets such as serving the needs

of medical and legal professionals. Data processing and communication services are likely to be increasingly important offerings by financial service firms.

- So long as firms can continue to enter the financial service industry with ease, the likelihood of the industry becoming dominated by a small number of providers is minimal.
- Because of the affordability of information processing and telecommunication services for firms of all sizes, access to technologies does not constitute a barrier to entry into financial service markets. Technology may actually facilitate entry. A small firm, by obtaining communication and processing services from others can enter a market and compete with firms many times its size. On the other hand, if the existing accessibility of processing services does not continue, entry into the financial service industry by small firms may be foreclosed.
- The ability to move information quickly, reliably, and accurately is essential to success for both providers and users of financial services. Organizations controlling extensive distribution and/or communication systems are entering and will continue to enter markets as providers of financial services.
- By facilitating the flow of information nationwide, information processing and telecommunication technologies have contributed to the development of national markets for financial services. Investors and users of capital benefit to the extent that their offers receive broader exposure than they would in a local or regional market. On the other hand, market conditions are not uniform nationwide; and opportunities may be more favorable in some areas than in others. Thus, there is a possibility that the existence of national capital markets will draw funds from some regions and cause their needs to remain unfulfilled.

Legal/Regulatory Environment

- The legal/regulatory structure now governing the financial service industry dates from the 1930's. Technological, social, and economic factors are causing considerable change in the types of services offered, the types of firms offering them, and the demands of the consumer. In light of the changes that have taken place, this may be the time to reconsider the overall legal/regulatory structure governing the financial service industry.
- Policies that have assumed a specific industry structure or service mix seem to be particularly vulnerable to unanticipated effects when new technologies are introduced. For example, the assumption that only banks will take deposits was undermined by the application of technology by firms other than banks to support offerings such as the money market account.
- Some recent changes in State banking law modify the way in which Federal law affects financial service institutions. In the past, States have generally supported policies for the financial service industry consistent with those of the Federal Government. This is no longer always true. Some banking organizations have established subsidiaries in States that have adopted policies favorable to them and use information processing and telecommunications to distribute services nationwide.

Financial Service Delivery Systems

- Financial service providers have used information processing and communication technologies to overcome some of the limitations, such as those restricting interstate banking, imposed on them by law and regulation. This has lessened distinctions between various classes of financial service providers, allowed the entry of firms not previously classed as financial service providers into the financial service industry, and allowed banks to enter into new businesses such as the operation of data processing service bureaus.
- Telecommunication policy is a major factor determining the price to the user of telecommunication services. Because telecommunication is a key component of financial serv-

ice delivery systems, telecommunication policy directly affects the design and viability of those systems.

Consumer Interests

- Because financial service providers are now able to use price as an instrument for competition, more and more financial services will be priced explicitly. "Free" checking accounts will disappear; brokers are likely to specifically charge for advisory services. Customers may be offered an increased range of choice and may pay only for services used. However, the elimination of some of the subsidies once hidden in "free" financial services may not be popular. The true costs of meeting the financial service needs of society will be more easily recognizable.
- There is increased flexibility in selecting financial services and the types of institutions from which they are obtained as a result of the trend to explicit pricing and the entry of new providers into the financial service industry. However, to take advantage of these opportunities, consumers must be sufficiently familiar with the available options. Many have taken advantage of new options they perceive to be in their interests.
- In spite of broader choices of services and institutions, some consumers are finding their options constrained. Checks, for example, often are no longer an acceptable payment medium unless the person can also present one or more credit cards to demonstrate financial responsibility. Some consumers are not welcome as clients to some financial service providers. Some may prefer to avoid financial institutions but find that increasing use of technology-based financial service systems propels them towards becoming clients of financial service providers. Lack of access to some financial services may implicitly limit or deny access to other goods and services (e.g., it is currently very difficult to rent a car if you do not have a major credit card). At some point, consumers may require guaranteed access to some minimal level of financial services if they are to be able to function as members of society.
- Survey data show that consumers are concerned with the effects of changes in the financial service industry on their ability to preserve personal privacy. Privacy issues, on the other hand, are not presently prominent on the congressional agenda. If incidents of compromised privacy are widely reported in the future, it may again be a focus of public policy debate.
- In many cases, a financial institution has no document bearing an authorizing signature that can be reviewed before an electronically issued order is executed. Errors in electronic financial systems may only become visible on the periodic account statement. Therefore, customers of electronically delivered financial services bear greater responsibility for detecting errors and initiating the procedures for correcting them than do customers using paper-based systems.

Safety and Soundness of the Industry

- Increasing use of information processing and communication technologies requires that both providers and users take precautions to ensure the integrity and security of financial service delivery systems. Although the use of technology may improve some aspects of the security and integrity of financial services systems, new vulnerabilities may be introduced. Computer-based authorization systems reduce the opportunity for fraudulent use of stolen credit cards. However, if an account number is compromised without the knowledge of the legitimate owner, its fraudulent use may not be discovered until a statement is received. Thus, the perpetrator may have a significant period after obtaining an account number to commit fraud with relatively little chance of detection.
- The existing regulatory structure promotes safety and soundness of the financial service industry by providing Federal insurance for funds deposited in many banks, savings

and loan associations, and credit unions. Funds entrusted to other institutions receive little, if any, of this Federal protection. The changes in the financial service industry have led to significant movement of funds from accounts in insured, closely supervised institutions to alternative investments that offer higher return. Yet, based on experience to date, there is no evidence that the fundamental safety and soundness of the industry have been appreciably compromised by the movement of funds from federally insured accounts.

Financial Services in the Future

Forecasts of the financial service industry prepared over the last 10 to 15 years have not been particularly accurate. Many of the earlier efforts foresaw the virtual elimination of the check and significant decrease in requirements for currency and coin during the last quarter of this century. Some saw particular promise in specific technology-based services (e.g., super-check, an instrument that would use one order to direct payment to multiple creditors, and telephone bill payment) that has not yet been realized.

Experts continue to prepare forecasts for the financial service industry. Firms continue to develop and bring to market what they believe to be promising services. Some are labeled experimental while others are designated as operational systems. Although forecasters appear to have developed more realistic pictures of future markets for financial services than were available in the past, much uncertainty remains.

Experience to date will not support an attempt to develop a detailed picture of the financial service industry of the future, but some general trends (e.g., ever-increasing use of advanced technology to deliver financial services) are clearer now than they have been. For example, there is little doubt among industry observers that customers will electronically order the immediate transfer of funds from their accounts to those of merchants at the time purchases are made. However, the specifics of the systems that will be used to implement this service remain open to question. OTA's analysis of general trends being followed by the financial service industry represents many points of view now held by knowledgeable observers.

Influence of Technology

The financial service industry of the future will be quite different. The established trend of increasingly heavy dependence on technology for delivering services will continue. Services will be provided by a wide variety of institutions. Barring a major restructuring of the wholesale side of the financial service industry, small financial service firms will be able to obtain access to the technologies they will require to remain viable. Although relatively few firms are likely to provide service nationwide, it is likely that the existence of a large number of small, specialized financial service organizations will prevent the few from dominating the market.

Communication will be key to delivering financial services in the future. Networks growing out of those used to connect shared systems of automated teller machines are likely to provide the basis of systems permitting electronic initiation of fund transfers from the merchant's counter. Systems providing access to funds from virtually any place in the Nation regardless of where they are deposited are now being developed and are likely to be in use in the next few years. Advanced communication technologies including satellite relays, video cable, fiber optics and cellular radio will find wide application in the financial service industry.

Decreasing computer costs will create the opportunity for large numbers of individual consumers and managers of small businesess to take advantage of technology in using financial services. Large computers will be used to support the data bases and the communication processing needed to operate the large, interactive financial service delivery systems of the future. Computers that accept voice inputs and recognize fingerprints may become cost effective for financial service delivery systems by the turn of the century. Small, inexpensive personal computers in both home and office will make it possible for customers to interact with a multiplicity of financial service offerors. Computer processor and memory chips imbedded in plastic cards may find widespread use in the financial service industry.

Financial Service Providers

Banks, savings and loan associations, and credit unions probably will concentrate on transaction processing and place less emphasis on gathering deposits and providing financing. Emphasis will be placed on computer and telecommunication-based systems for delivering financial services. Included in the services offered will be data processing, securities brokerage, and, possibly, insurance. In the future, branches will be dominated by a variety of machines the consumer will use to directly interact with financial service systems. Institutional personnel will serve more of an advisory role and handle customer transactions, such as payments and withdrawals, only in exceptional cases.

Securities broker/ dealers, long providers of transaction services, will compete directly with banks, savings and loan associations, and credit unions in many areas. Today they already offer a variety of services such as money market funds that are designed to give the customer ease of access to financial assets. This trend will continue, and the future is likely to see higher levels of activity by securities broker/dealers in processing an increasingly broad variety of transactions. Retailers of food and general merchandise and possibly other types of organizations will be attracted to the financial service industry. They will see opportunities to profitably apply technological resources which are in hand or within reach to offer transaction processing services.

Firms that have established information processing and telecommunication facilities are likely to be particularly active in the financial service industry. New entrants into the industry will have roots in such varied areas as retail food and dry goods merchandising, petroleum production and distribution, and communications. Traditional providers of financial services are likely to continue the present trend toward diversifying their offerings, often entering into areas that have been closed to them in the past.

Users of Financial Services

Financial services will be delivered to the customer at a convenient location with little need for clients to visit the offices of a financial service provider. The present tendency of corporate financial officers to use terminals in their offices to manage funds will extend to smaller businesses. Although the trend is not yet clearly established, individual consumers are likely to use home terminals to interact with financial service delivery systems.

Consumer financial service packages are likely to be offered in conjunction with other information-based consumer services such as home shopping, investment advisories, recreational services such as computer games, travel reservations, and the purchase of tickets to sporting and theatrical events. Financial service institutions may develop and operate the network used to distribute these services or they may participate in networks assembled and operated by others.

Consumers may use terminals to order banks to pay bills or to purchase securities. They may enjoy more flexibility in services used. For example, rather than carrying a fixed amount of insurance, a terminal could be used to vary it in response to changing needs (e.g., increasing coverage for theft while jewelry is kept at home rather than in the bank vault). Orders to buy or sell stocks and bonds could be entered from home and executed on an automated exchange. Consumers may use home information systems to analyze their financial positions and to help make decisions on investment opportunities. Using these and other capabilities will give the consumer greater personal control over his assets.

Consumers may find that they need an account with a financial institution to have access to a variety of services. Some employers may require direct deposit of payroll checks. Alternatively, employers may offer employees the option of writing checks against salary held in a company account in return for being paid daily. Consumers may need an account to be able to use shop at home and travel reservation services.

Although technical differences will remain, operational distinctions between services offered by various classes of providers will diminish. It will be more difficult for users to differentiate between them. For example, though a money market fund offered by a securities dealer is quite different from a demand deposit offered by a bank, both meet similar needs for consumers as accounts from which funds can easily be withdrawn.

Congressional Policy Issues

The results of changes already observed in the financial service industry and those possible in the future are not consistent with some of the key assumptions underlying the present Federal policy structure. Growing direct competition between banking and the securities industry, the appearance of new classes of financial service providers, and the changes following from rapid increase in reliance on advanced technologies to deliver financial services exemplify shifts that have taken place. Therefore, Congress is faced with significant questions about the relevance and utility of present public policy. In addressing these questions, Congress will find it necessary to resolve conflicts between the need to reconcile conflicting interests, on the one hand, and to create a climate conducive to the development of new financial services and delivery systems beneficial to both users and providers on the other.

General Policy Considerations

Restructuring the Policy Framework

- **What are the alternative approaches that could be used if a review and restructuring of laws and regulations related to financial services were undertaken?**

The financial service industry has changed since the 1930's when most of its present policy structure was developed. Rapid change, encouraged by technology and other market forces, is expected to abate in the 1980's or 1990's. Although Congress has commissioned comprehensive reviews of the financial service industry and the legal/regulatory structure governing it and has addressed some specific changes in the industry, legislation revisiting the fundamental premises of existing policy has not been enacted.

One alternative is continuation of the present approach of incrementally adjusting the policy framework as the financial service industry continues to evolve. Some of the steps taken using this approach are in anticipation of future events; others are taken in response to events in the marketplace. Alternatively, the entire legal and regulatory structure governing the financial service industry could be reviewed and recast in a form deemed suitable in light of expectations for the future.

Implementation of Policy

- **What are the mechanisms available to Congress for implementing policy pertaining to the financial service industry?**

Historically, Congress has implemented policy for the financial service industry through one of the most pervasive regulatory structures applied to American industry. Public policy has focused on ensuring the safety and soundness of financial institutions because of their unique role in society. To this end, the assets of the clients of many financial service institutions, particularly banks, have been protected through a combination of insurance and examination programs. However, new entrants into the financial service industry, many of whom are subject to neither Federal nor State regulation, now compete with regulated traditional financial service firms. Because the nature of competition in the financial service industry has changed, traditional protections implemented through existing regulation have lost some of their effectiveness.

Regulations applicable to the financial service industry have been eased in recent years. Controls on interest rates have been relaxed and bank holding companies have become freer to broaden the lines of services (e.g., data processing) they offer.

As Congress continues to develop and refine policy for the financial service industry, one of the tools at its disposal is its ability to vary the degree of regulation applicable to providers of various financial services. Alternatively, it may modify the outcomes of market forces to mitigate adverse affects on specific groups. For example, if the market were to compel individuals to have at least one account with a financial service provider, Congress might choose to provide a means for ensuring that all are able to obtain a satisfactory package of services.

Structural Issues

Consolidation in the Financial Service Industry

- **What levels of concentration in the financial service industry are consistent with the goal of preserving competition among providers of financial service?**

There are 40,000 banks, savings and loan associations, and credit unions in the United States. Thousands of other organizations including securities broker/dealers, consumer finance companies, merchants, and insurance companies also provide financial service. A goal of Federal financial services policy has been to preserve competition and prevent concentration in that industry.

Technology-based financial service systems are changing the nature of competition within the industry. Financial institutions are entering new markets and competing both among themselves, and with other industries, more deliberately and directly than ever before. New entrants are providing services in areas that, in the past, have been reserved to traditional financial service institutions. In the face of technological change and competition, mergers involving both traditional financial service providers and new entrants have taken place. It is possible that these changes will result in a net reduction in the number of providers and will reduce competition in the financial service industry. Some observers are concerned that this could lead to excessive concentration of economic power.

Congress may find that in light of other trends affecting the financial service industry, the trend toward greater consolidation in the industry is acceptable. Alternatively, it may use one of several available strategies to limit consolidation. For example, specific criteria for controlling entry to and exit from the industry could be established.

Restrictions on Interstate Banking

- **What modifications, if any, could be instituted regarding restrictions on interstate banking?**

While Federal law limits interstate branching by institutions allowed to take deposits, it does not prevent interstate activities by these organizations. Banks have established interstate networks of offices that market services other than deposit-taking, such as lending. Some financial institutions have used technology-based delivery systems to circumvent these restrictions and some States have passed laws that permit regional interstate banking. Federal law now permits acquisition of one financial institution by another in a different State under specified circumstances. Unregulated competitors of depository institutions are able to establish offices without regard to geographic boundaries and, hence, may offer services nationwide.

Available options for Congress include retention of present policies with respect to interstate operations of financial service organizations, reducing or removing restrictions completely, or making restrictions more inclusive than they are at present. For example, all institutions that offer deposit-taking services could be made subject to restrictions on interstate operations. Loopholes in existing law and regulation could be closed. Restrictions on interstate deposit-taking through automated teller networks could be relaxed.

Limitations on interstate banking stemmed, in part, from concerns that some banks serving regional or national markets could achieve an unwarranted degree of economic power and that local needs for capital would remain unmet as funds were concentrated in major money centers. An alternative for addressing the latter would be to strengthen requirements that institutions taking deposits meet needs for credit of the area from which deposits are gathered before funds are made available to regional or national markets.

Market Segmentation

- **How might law and regulation be used to focus the attention of various classes of financial service providers on specific market areas?**

The existing policy structure more or less compartmentalizes the financial service industry by function. Banks may take deposits, insurance companies may underwrite insurance. Insurance companies may not take deposits and banks may not underwrite insurance. Nevertheless, new entrants to financial service markets have been able to offer services in direct competition with those for whom, in the past, specific market segments had been reserved. Operators of investment funds, for example, offer services that share many features of deposit accounts offered by banks. In some instances, the traditional providers have been unable to respond fully to their new competitors because of the regulatory structure within which they must operate.

Congress may choose to resolve this issue by permitting banks and other institutions to offer financial services that range over a broad spectrum, enabling them to be more responsive to competitive offerings of others. Bank powers could be broadened to include the underwriting of securities and insurance, for example. Alternatively, powers to affect mergers between financial service providers and firms from outside the financial service industry could be modified. To an extent, this would represent a continuation of current practice in which the Federal Home Loan Bank Board has permitted mergers across State lines between savings and loan associations. Under the provisions of the Garn-St Germain Act of 1982, banks have been permitted to acquire distressed, out-of-State savings and loan associations.

A third alternative would see the implementation of policy encouraging financial service providers to engage in activities with clear social benefits. Examples would be incentives encouraging all providers of financial services to finance home ownership and educational programs.

Relationship to Telecommunication Policy

- **How will further deregulation of telecommunications affect the financial service industry?**

Financial service providers depend heavily on telecommunications to deliver services to their clients; and, therefore, they are sensitive to changes in that industry. Many have built and operate sophisticated private telecommunication networks. Without adequate telecommunication capabilities, the financial service industry cannot meet the needs of its clients. Changes in telecommunication costs have a direct and immediate effect on both providers and users of financial service.

The telecommunications industry is undergoing fundamental changes that are altering the nature of the services available to its customers and the prices that will be charged. As financial service delivery systems designed for direct interaction with customers become more commonplace, relationships between the product mix, operating characteristics and structure of the telecommunications industry, and the operations of the financial service industry will become closer.

The formulation of telecommunication policy is extremely complex and beyond the scope of this report. However, Congress should remain aware that telecommunication policy directly influences the economics of financial service delivery systems and, hence, the mix of financial services that will be offered.

Competition Between Regulated and Unregulated Service Providers

- **What steps could be taken to realign the legal/regulatory structure to make it conform more closely to the changing structure of the financial service industry?**

Many financial services offered by unregulated firms are comparable to those marketed by regulated institutions. For example, money market mutual funds marketed by securities dealers have attributes in common with some of the various checking accounts offered by banks. Retailers of food and general merchandise are building networks of automated teller machines and networks to communicate payment data in direct competition with those built and operated by financial institutions. While the user may not perceive any real difference between the offerings of various financial service providers, in some circumstances the existing legal/regulatory structure does not cover the activities of non-traditional providers. Users of these unregulated services often do not receive the same protections provided with services offered by regulated institutions.

Congressional options for addressing this question range over a broad spectrum. The present dual system of regulation by both the Federal Government and the States could be continued. Alternatively, Congress could follow the model for the insurance industry and defer to the States for all regulation of financial services. At the other extreme, Congress could preempt all State regulation of the financial service industry. Regardless of the level of the Federal presence, and in contrast with the present practice of distributing responsibility, all Federal regulation of financial services could be combined and assigned to a single agency. The focus of regulation could be shifted from the institutions providing service to the functions performed regardless of the nature of the organization performing them. For example, rather than regulating banks as a means of controlling deposit-taking, regulate all organizations that perform the deposit-taking function regardless of the other lines of commerce in which they may have interests.

Barriers to International Operations

- **The concerns of foreign governments regarding the protection of individual privacy could lead to the erection of barriers for American financial service firms doing business overseas. What steps could the United States take to address these concerns or circumvent the barriers?**

Foreign government implementation of personal privacy protection programs, some of which are more stringent than those of the United States, may restrict the international operations of American financial service providers. Some nations have suggested that they may limit the movement of personal data across their borders to and from others that do not meet their standards for privacy protection. The United States may find the operations of its financial service industry limited by privacy policies of foreign governments.

Congress, in considering this issue, may choose to continue the present course and to not expand the privacy protections now in place. Alternatively, it may adjust privacy law as it relates to financial services as a means of reducing potential barriers to American financial service providers other nations may raise.

Access to the Clearing Systems

- **What organizations could be granted access to the mechanisms for clearing checks, securities, and other payment instruments such as credit card drafts?**

Banks and savings and loan associations are the only institutions with direct access to the payments system. This may give them a competitive advantage over other offerors of checking account substitutes, credit cards, and debit cards. Some securities brokers offer accounts from which funds may be drawn by either a paper draft or debit card and other organizations, such as the American Automobile Association which offers VISA, issue bank credit cards. However, offerors of payment instruments that are neither banks nor savings and loan associations, almost without exception, must obtain payment-processing services from an institution that has access to the payments mechanism.

In light of the technologies now available, some argue that other types of institutions should also be granted access to the payments mechanism. One major merchant is now permitted to enter transactions into one of the bank card networks without using the services of a financial institution. Conceivably, the future could see the development and operation of significant systems for transferring funds without the involvement of banks and other traditional providers of payment services.

The Federal Reserve System was established, in part, to assure smooth operation of the check-processing system. Congress may decide that the operability of the payment system can only be assured if it remains under control of the banks and savings and loan associations. On the other hand, Congress may choose to open access to the payment system to others, such as data processing service organizations, willing to meet specific criteria. Or, it may open the system to all who would join without establishing specific criteria for membership.

Risk Allocation Issues

Control of Interest Rates

- **What alternatives for regulating interest rates are available to Congress?**

Federal controls on the interest rates paid by federally insured institutions are being phased out. States impose limits on the interest rates that may be charged on some types of loans. In recent years, when market rates have exceeded both Federal and State limits, significant quantities of funds have moved from banks, credit unions, and savings and loan associations to alternative investment opportunities created by new entrants to the financial service industry. These new entrants have relied heavily on advanced telecommunication and information processing technologies to implement their offerings. Constrained interest rates effectively limited the supply of funds to some classes of invesments. In many cases, policymakers have reacted to these movements by changing the legal limits on interest rates paid and charged.

Congress may choose to ensure total decontrol of interest rates by preempting State usury laws. Alternatively, the same mechanism could be used to establish uniform, regulated interest rates nationwide. Other alternatives include maintaining controls on interest rates paid on federally insured accounts and ceding to the States control of all interest rates paid within their boundaries.

Allocation of Risk

- **What are the alternatives for apportioning risk between financial institutions and their customers and clients?**

Deposit insurance protects holders of accounts in covered institutions from loss of assets up to the limits of the insurance. Although some noninsured accounts share many of the attributes of insured accounts, because the account holder is not protected from loss of principal, they often carry a higher level of risk for account holders. However, because Federal agencies that insure deposits have preferred to find merger partners for distressed institutions instead of closing them, deposit insurance has implicitly provided protection for stockholders and holders of large deposits as well as the owners of accounts with balances below the limits of insurance coverage. Some argue that managers of financial institutions take unjustified risks because they feel they are implicitly protected by deposit insurance. It has also been suggested that depositors and others with whom an institution deals do not review the condition of the institutions with which they conduct business as carefully as they might because of the presence of deposit insurance.

Deposit insurance has been key in the policy framework designed to sustain the safety and soundness of the financial service industry. Congress may choose to continue it in its present form where the same insurance rates apply to all covered institutions. Alternatively, the premiums charged insured institutions could be modified to reflect the level of risk the insurance program is required to underwrite. Further, deposit insurance could be extended to accounts not now covered.

Lifeline Financial Services

- **What is necessary to assure an adequate level of financial service to all segments of the population and to protect other basic consumer rights and interests?**

Individuals who so choose have been able to avoid dealings with providers of financial services. However, the ability of consumers to avoid dealings with the financial service industry is being limited by such factors as pressure from employers and government to accept payments by direct deposit and the increasing role of the credit card as an item of identification. In the future, it is likely that access to some minimal set of financial services will be essential for all citizens.

Congress, in approaching this issue, may find it necessary to define a minimal set of financial services needed by virtually the entire populace. It may then wish to specify alternative institutional structures that could be used to deliver such a package of services including the possibility that all providers of transaction accounts be required to offer the "lifeline" package. Congress may wish to define the rights of consumers to payment services and the information regarding them that needs be provided to users. Consideration of a policy that would govern the timing of debits and credits to an account to ensure equitable treatment of consumers may be advisable.

Privacy

- **Some changes in the delivery of financial services increase the possibility that the privacy of citizens could be eroded or violated. How can Congress reduce that possibility?**

Systems that use information processing and telecommunication technologies for delivering financial services gather data more rapidly and make it more accessible than do paper-based systems. Information on the financial activity of individuals can be accumulated and used without their knowledge or consent. Existing law provides some protection from intrusion on financial data by the Federal Government, but virtually no protection from the use of this information by State and local governments or private parties and organizations. Increasing use of electronic systems for delivering financial services exacerbates potential threats to individual privacy.

One alternative open to Congress is to explicitly define the rights of citizens to privacy. Because users of financial services must, by the nature of the systems used to deliver them, surrender privacy to a degree, Congress may choose to require they be provided a statement disclosing the degree to which privacy is likely to be compromised. A program of monitoring and enforcing rights to privacy might be established.

Security and Integrity of Delivery Systems

- **Are additional actions needed to safeguard the integrity of national payment and transaction systems against risk of disruptions from systems failure, hostile attack, and natural disasters?**

System security and integrity have always been of paramount concern to the financial service industry. Both paper-based and electronic systems for delivering financial services are vulnerable to attack from the outside and to systemic failure. While electronic systems overcome some of the vulnerabilities inherent in paper-based systems, new problems are introduced. Continued operability of many major computer-based systems can only be assured through the availability of redundant automated systems. In these cases, some system failures can threaten the existence of a financial institution since manual processing is not possible in the event that a primary automated system fails. For example, if a bank is unable to perform routine transaction processing because of a system failure, it may not be able to settle its accounts with other institutions on time and, as a result, may fail.

Although recognition of the problems of system security and integrity is becoming more widespread, its true magnitude is not known. Additional information is needed before reasonable public policy alternatives can be identified. Therefore, Congress may wish to either hold hearings or establish a national commission to assemble additional information prior to undertaking a specific legislative program. Possibly the Federal Emergency Management Agency could help meet this need for information.

Vulnerability of Financial Service Systems to Theft

- **What alternatives are available for controlling the risk of theft from or associated with financial service institutions?**

Theft of assets is a constant threat for financial service providers and their clients. New combinations of telecommunication and computer processing for delivering financial services provide new avenues for theft. As safeguards are put in place, new methods of perpetrating crime against financial service systems are found. Some of them, theft of data under some circumstances for example, are not clearly covered by existing law. Some financial service providers are hesitant to report incidents of theft involving technology-based systems in fear both of lessening the confidence of their customers and of revealing system vulnerabilities to potential predators.

In dealing with this issue, Congress may continue to rely on existing law and law enforcement capabilities. Because the issue is not well understood, Congress may wish to gather additional information regarding the problem and alternative solutions either before acting or following initial steps to deal with the most salient aspects of the issue. In the short term, it may modify the law to more clearly deal with the obvious problems (e.g., clarifying the treatment of those who steal data) that have accompanied the inclusion of advanced technologies in systems for delivering financial services. Additional resources and technological capabilities could be made available to law enforcement authorities. Penalties against both the perpetrators of crime and those that conceal it could be increased.

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Present and Future Technologies Supporting the Financial Service Industry

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Chapter 2

Present and Future Technologies Supporting the Financial Service Industry

Introduction

Quite simply, the financial service industry could not provide the level of service it does without the support of advanced information processing and telecommunication technologies. The numbers of checks (over 37 billion annually), credit card drafts (over 3.5 billion annually), and securities trades (over 30 billion shares traded annually) would swamp any manual system that tried to handle them. In fact, during the 1960's, trading days for the New York Stock Exchange were shortened because the broker/dealers were unable to handle the workload.

Yet, even with all of its sophistication in the application of technology, the financial service industry has not yet exhausted the potential of the technologies now available. Even though large computers support check reader/sorters handling thousands of items a minute, all other aspects of check processing are manual, and telecommunications is not used in the check-processing cycle. Checks are still manually encoded with the amount by proof operators at the bank of first deposit or, in return for a reduced processing fee, at the retailer location. Return item processing remains a manual operation. Similarly, credit card drafts are manually encoded before processing, and the securities industry still processes millions of stock certificates manually.

As the economics of the technologies continue to improve, market pressures to apply them more extensively increase. They help and encourage further migration from paper- and labor-intensive implementations to electronic, self-service, and remote-based banking.

Operational considerations limit more widespread realization of the potential of the technologies. For example, only in recent years has the annual rate of growth in the number of checks slowed, from about 7 percent to about 5 percent. The fact that many are unwilling to forgo return of the physical check to retain as proof of payment limits the possibility of implementing meaningful check truncation programs. Similarly, many still take delivery of physical stock certificates, even though book-entry systems for recording the stock ownership provide an alternative.

In the future, the costs of hardware used to implement advanced systems for delivering financial services will continue their long-term decline. New technologies such as the processor in a card and new systems to establish the authenticity of the order to execute a financial transaction will become available. In general, the ability of the financial service industry to take advantage of the technology is not likely to approach the rate at which it becomes available. There is little chance that technology will limit the industry any time in the foreseeable future.

Historically, the initial applications of technology "automated" existing processes. For example, the application of computers to account maintenance simply translated existing manual processes into automated ones. The adoption of MICR* encoding on checks has done little to change the way checks are used. Thus, early application of automation in the financial service industry had little, if any, direct effect on the users of financial services. On the other hand, systems now being deployed are changing the fundamental character of the financial services consumed by users. Automated teller machine (ATM) networks, for example, enable users to obtain cash at locations that cannot be served directly by the financial institution holding the account. Moreover, funds are accessible around the clock.

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*MICR—magnetic ink character recognition.

Technologies waiting in the wings have the potential for changing the basic character of the systems used to deliver financial services and, as a result, the structure of the financial service industry. Remote banking via such diverse technologies as teletex, home computers, and multifunction transaction work stations installed in the offices of financial institutions could be implemented with technologies now available.

The so-called smart card, lingering just over the horizon, has the potential for changing the basic character of currency from paper to electronic. Market viability remains to be demonstrated and sufficient developmental capital allocated. In addition, an infrastructure of terminals capable of supporting the smart card, either supplementing or replacing the existing infrastructure for handling magnetic stripe technology, must be put in place before this technology can become a significant factor.

In order to understand present and future trends in the financial service industry, it is essential to have a grasp of present and emerging information processing and telecommunication technologies and of their relationship to present and future products and services. This chapter describes the basic technologies that are and could be applied for delivering financial services. The purpose is to create an appreciation for the potential and the limitations of the technologies for facilitating change in the financial service industry. Yet, one must understand that the technologies constitute but one of a number of forces operating to shape the financial service industry and that their potential may not be realizable because of other constraints that are operating.

Computer Hardware Systems

The providers of financial services have been among the leading users of medium- to large-scale processors, and only the very largest scientific computers have not yet been widely applied for the delivery of financial services. These large computer systems generally require dedicated facilities and support from an onsite team of information processing professionals. For all practical purposes, providers of financial services can buy computing power appropriate to their needs from a number of well-established manufacturers. Further, because of the way computer manufacturers design and enhance their product lines, organizations are able to have reasonable expectations that they will be able to make the transition, as needed, to machines of greater capacity with a minimum of operational disruption. However, even with the decreases that have occurred in the costs of medium- to large-scale computer systems, they are still priced beyond the means of many of the smaller financial service organizations that could benefit from having access to them.

Microcomputer Systems

Changes in the technology of computer processors at the low end of the capacity spectrum (i.e., those with the most limited capacity) are having the greatest impact on the operations of the financial service industry. Both users and providers are using them heavily. Microcomputers range in price from less than $100 to almost $10,000 (for some of the more elaborate systems now on the market). However, a $100 unit has only limited capacity to participate in a financial service system because it has neither communication nor significant data storage capacity. Additional capabilities must be added if the user wants to use the various financial application packages being marketed for personal computers. These include, for example, such diverse applications as home

Photo credit: Micro General Corp.

Two widely used microcomputer systems

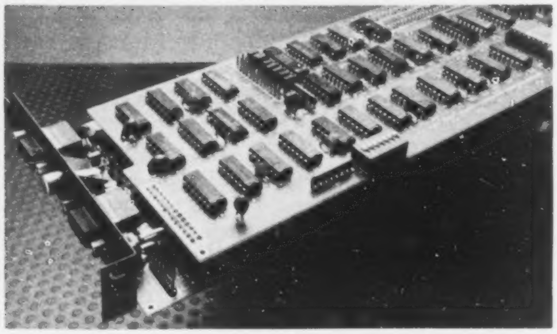

Photo credit: LISI Computer Products

Printed circuit card of the type used in microcomputers. Each of the rectangular cases contains a circuit that consists of the equivalent of several thousand transistors

budgeting and accounting systems, checkbook balancing programs, securities price trend analysis, portfolio analysis, and income tax preparation.

A cassette recorder costing about $50 would permit the user to load prerecorded programs and save intermediate results so that they would not have to be reentered into the computer manually every time they are to be used. A disc drive offering faster and more reliable access to data and programs can be purchased for some units for about $250. A printer that can be used to make paper records for users would cost another $250. Applications the user may wish to run may require the addition of memory expansion modules that cost more than the original $100 price of the computer. The user will, in some cases, have to spend $200 or more on an accessory required for making the connections between the peripherals and the computer. Yet even with all these additions, the user would still have a system limited to local use and applicable principally only to recordkeeping and analysis of data entered into the computer by the user.

To take advantage of home banking and stock market transaction services, information utilities, and home shopping services that entail interaction of a personal computer with a computer operated by the financial service provider, a personal computer must be equipped with suitable data communication equipment. These include a feature that does the processing required to establish and maintain a telecommunication connection (RS-232 interface) and a unit (modem) connected to the telephone line for converting digital pulses used internally by the computer to analog signals that can be transmitted over the conventional telephone lines of a switched telephone network. In addition, programs to support the communication function or to handle the financial application would have to be procured, at a cost ranging from under $100 to $250 or more, depending on the complexity of the application. Although a disc drive and expansion interface might be required for such a function, a printer would most likely be a discretionary purchase.

Thus, while computers can be acquired for $100 or less, the person who would like to use them either to receive financial services and/or to perform financial analysis is more realistically looking at an investment that is closer to $700 or $800. However, this situation is not likely to persist in the long run. The prices of all computing equipment are falling. Some vendors are selling modems for under $100, and the price of disc drives continues to fall. Computer modules that work with widely distributed video games are on the market, and they are expected to offer the user significant improvement in the performance-to-cost ratio for equipment that could be used in conjunction with various future financial service offerings. In addition, small, battery-powered, portable computers that can be carried in a briefcase and have a built-in modem and RS-232 interface are now available for under $1,000, a price that will undoubtedly be lower in the future. Therefore, computers that can be used by individuals to receive financial services both at home and work are likely to be well within reach of a large portion of the population within the 1988 to 1993 time frame.

Another alternative would be development of very inexpensive specialized devices oriented to users of financial services. These could use cartridges similar to those used with television game machines, very simple control mechanisms, and a television to display the data. Some providers may even develop applications that use a TV game machine as the key processing element. In this enviroment, users may actually have several terminal devices to interact with financial service systems, each of which is dedicated to the offerings of a particular provider. Simple, inexpensive, dedicated devices may find extensive application in point-of-sale (POS) systems as well as those designed to deliver services to consumers. The availability of terminals for users at little or no cost could be a strong impetus to increasing significantly the rate of adoption of advanced systems for delivering financial services.

People have demonstrated repeatedly that they will spend substantial sums if they perceive utility in a product. Historically, this has been true with television; more recently, with video recorders. However, it remains to be seen whether a large number of individuals will be willing to invest in information processing and telecommunication equipment capable of interacting with systems for delivering financial services to the home. Success of financial service offerings may depend on minimizing the investment of potential customers and, perhaps, what other services may be available through the same systems.

Large Computer Systems

While there will be significant changes in the capabilities of computers at the low end of the spectrum that will enable a larger number of people to access the technology, changes at the high end of the scale will also occur. Speeds of computation and the basic architecture of computers will change so that there will be a marked increase in the performance-to-cost ratios over those now available. The raw computer power for applications such as image and voice processing will become available. Both applications have potential for the financial service industry. Voice recognition applications could be used as an alternative to key input particularly in telephone-oriented systems in which the user would use voice to issue payment and other directives to financial service systems. Applications of image processing systems, some of which are now be-

Photo credit: NCR Corp.

Modern mainframe computer system

ing tested, could range from processing fingerprints for identifying the user of a remote service device to reading information on checks as part of check processing. As the cost of equipment continues to fall, more providers of financial services will find the equipment affordable. In addition, customers will become better equipped to take advantage of the various services offered (see table 1).

Future Computer Hardware

During the coming 10 years, changes in computer hardware that are generally invisible but beneficial to users will occur. Functions such as those needed for system control and the processing of some programing languages now implemented in software will be moved to the hardware. Special-purpose machines featuring applications built into hardware will be assembled from a variety of general-purpose building blocks at minimal cost to meet the needs of specific applications. As a result, not only will the computers used to deliver financial services be less expensive, they will also be more reliable.

Table 1.—General-Purpose Application Processors

	1982	1987	1992
Small:			
Cost (dollars in thousands)	12	8	5
Storage (megabytes)	0.5	1	2
Speed (millions of instructions per minute)	0.05	0.1	0.4
Medium:			
Cost	100	60	40
Storage	1	2	8
Speed	0.2	1.0	4
Large:			
Cost	1,400	600	400
Storage	8	16	48
Speed	4	8	24

SOURCE: Arthur D. Little, Inc., "Application of Technology for Providing Financial Services," April 1983.

From the users' point of view, this will reduce the complexity of computer systems, while at the same time enabling him to select a computer that is more or less tailored to the applications it must support. For example, suites of special-purpose machines in facilities operated by financial institutions, mixed to meet the needs of the customers using them, will be possible. Some devices could be used only for balance inquiry and the kinds of transactions now performed through an ATM. Others could be used to submit loan applications and/or initiate securities transactions. A single cash dispenser/deposit acceptor* could serve multiple user stations, thus keeping overall system costs down. Financial institutions may find it in their interest to provide customers with terminal devices specifically oriented to the package of products and services being provided, thus overcoming any hesitancy to acquire and use general-purpose computer hardware that requires some specific knowledge of the technologies.

Computer architecture will be increasingly modular, with functions divided between and among various system components. On the one hand, this will make it possible for users to configure systems to meet their specific requirements, while on the other, it will tend to increase system reliability and integrity. If one component fails, the probability that system operation will continue at some degraded level of performance is high. Providers and users of systems for delivering financial services will benefit from an increase in the availability of fault-tolerant systems to support online applications. The mean time between failure for such systems is measured in years, since they are designed to continue operating without degradation in performance in all but the most catastrophic circumstances.

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*A deposit acceptor would have the capability to count cash and read the amounts of checks as they are deposited.

Alternatives to keyboard entry will increase the flexibility and attractiveness to users of self-service financial systems that are accessible from remote locations. For example, the user will be able to communicate instructions to a computer by touching one of a few control buttons or an image on a screen. Already, touch screens are available on devices that range from wristwatches to computers, and greater application of these in the future can be expected. Limited voice input capabilities will be available, but continuous speech language processing will not be possible before the turn of the century, if then. Optical character recognition technologies will continue to become more cost effective, and there will be some capabilities to process handwritten input. Systems that use the signature to identify the user rather than a personal indentification number coupled with a machine readable card could come into use by the middle of the coming decade. On net balance, these alternatives will reduce the use of multiple keystrokes needed to respond to requests for information, and hence will reduce barriers to use and increase efficiency of the new systems for delivering financial services.

Greater use will be made of color and graphics in computer output. The ability to transmit pictures easily will mean that the user will have less need to read. Video disc technology could be coupled with computers, especially in such applications as home shopping and others that require catalog-type data. Video "catalogs" could show the shopper multiple views of an item and could be updated frequently to show newly arrived merchandise and to reflect price changes. Voice synthesizers have become very affordable, and they will be used both to support graphics displays and to provide computer output through the standard voice telephone. Displays will become more compact and will blend more completely into the background than is now the case, thus making them more acceptable in both the home and office. The telephone will become a multipurpose instrument capable of receiving alphanumeric as well as graphic data, in addition to its conventional use for voice transmission. Such devices are already on the market for applications in the business environment.

The key to the future will be ease of use. As new terminals become available and are capable of presenting and transmitting information in a multiplicity of formats, user anxiety relating to the technology used to interact with systems for delivering financial services should approach the level now experienced with the telephone or the handheld calculator.

Future providers and users of financial services will have the choice of using networks of small processors or the minicomputers and mainframes that will soon become affordable for them. To some extent, they, like everyone else who acquires information-processing capabilities, will be able to choose the equipment that best meets their requirements for processing and their philosophies of product design and management. Factors such as system security, reliability, and integrity will be taken into account. Other factors will be the availability of appropriate software packages and the costs of telecommunication services.

In some specialized applications, however, the large computer system will continue to dominate. For example, significant computer power is required to support the check reader/sorters used widely throughout the financial service community. While electronic banking will lessen the growth in check volumes, they will remain high. Therefore, requirements for supporting check-processing equipment will continue into the foreseeable future. New applications implementing processing of voice and/or handwriting will also require the power of mainframe computer systems. In addition, microcomputers may not be capable of managing future telecommunication functions that will become even more significant to the financial service industry.

Online POS systems will consume substantial processing and communication resources. Interchange networks that serve ATM systems are designed to handle 4 to 10 transactions per second and provide a response time that ranges from 30 to 90 seconds. Paul Hefner of First Interstate Bancorp of California, points out that POS networks will have to handle hundreds of transactions per second and provide a response on the order of 6 seconds. Thus, the processing capacity required to support these networks may begin to approach the limits of the technology, if they begin to handle the transaction volumes foreseen by some.

Already, both users and providers of financial services have put in place a considerable portion of the hardware infrastructure that will be key to delivering financial services. Banks and other financial service providers have been long-time users of computers, as have the major dry goods retailers. However, an increasing number of small stores are installing electronic cash registers and computers from which they will be able to build in the future. Some grocery chains have made heavy use of computers to automate the checkout process and inventory systems for individual stores. Major firms regularly use automated systems to generate payrolls and pay suppliers. Smaller firms are increasingly turning to data service bureaus or installing small computers to obtain comparable services. Also, considerable numbers of consumers are acquiring computers that could be configured to perform the processing required to interact with financial service delivery systems.

One of the factors that has limited the degree to which advanced systems for delivering financial services have been accepted has been the lack of processing capabilities in the hands of many potential users and suppliers. The fact that many potential participants in the financial service industry are installing computers for a variety of reasons is creating a latent capability for either using or delivering financial products because the marginal cost of such a move could be minimal.

The long-term impact of changes in the capabilities of computers on the users and providers of financial services is not so much that the raw computational capability of the equipment will increase. Rather, an increasing number of individuals and organizations are buying equipment because its cost is dropping. The result is a decreasing marginal cost of entry for potential users and providers of advanced financial services systems. Higher potential levels of participation will encourage the deployment of advanced systems and, in the absence of other barriers to their acceptance, will result in their achieving a greater level of economic viability than would be possible with the present level of equipage.

Generally, the financial service industry has not demanded access to the largest computers to handle its applications. Advances in computer technology will most likely continue to outpace the demands of the financial service industry, and therefore, lack of sufficient computer power will not be one of the factors that will limit the development of new systems for delivering financial services.

Software

A computer is useless without software: the programs that instruct a computer to perform operations. The development of software depends on the careful and precise definition of requirements by those for whom a system is being built, thorough testing before declaring a program to be operational, and an ongoing program of maintenance to ensure that the software remains responsive to user needs and to remove errors that are almost invariably identified after a program is declared operational. All of these operations are labor-intensive, and therefore very expensive. The cost of software is determined by its complexity rather than the size of the machine on which it is to operate or the volumes of data that are to be processed. Generally, however, larger machines are needed to use the more complex software packages that support the larger data bases.

Although the cost of computer hardware will continue to decrease, the cost of computer software may not, or may not decrease as much. Software development remains a labor-intensive activity and is likely to remain so into the 1988 to 1993 time frame. However, more widespread use of software packages will lower costs for individual users.

Until now, resources for software development have fallen short of demand. The advent of new tools for software development, however, should increase the productivity of software professionals somewhat. Furthermore, a greater tendency to purchase and modify application packages to meet specific needs as a substitute for the development of application packages by each end-user organization will reduce the apparent shortfall of software development resources in the future.

There are three basic classes of software—systems software, support software, and applications software. Systems software controls the minute-to-minute operations of the computer by allocating resources and scheduling tasks. Support software is typically used for such functions as controlling a communications network, monitoring transaction processing, managing the data base environment, or furnishing tools intended to improve the productivity of programers and, in some cases, end-users. Applications software directly interfaces with the end-user and is designed to carry out functions unique to the particular situation.

Systems and support software, including data base management systems, are discussed in appendix 2B to this chapter. Applications software and its use for delivering financial services is described in the sections that follow.

Present Applications Software

The acquisition of applications software has always been the responsibility of the user organization. Today the computer user has three options for acquiring software. First, the user can retain either in-house staff or a consultant/contractor to build application packages uniquely tailored to his needs. Because program development remains labor-intensive, this can be a costly process, a significant portion of which is the cost incurred—after the system becomes operational—for maintaining the programs, correcting errors as they are discovered, and making changes as the needs of the organization evolve. For operators of large-scale computer systems, such as those used by many providers of financial services, this has been the only option considered. Large staffs of highly trained professionals have been assembled and supported to handle the tasks of system development and maintenance. Experienced organizations have found that over 70 percent of the resources spent on these staffs is for maintaining existing systems, leaving only 30 percent for developing new applications programs.

Financial service organizations have developed a huge body of proprietary software over the years. Included are applications that range from internal accounting systems to those that support home banking products. When a new product such as a money market mutual fund is offered, its introduction must often be preceded by a significant software development effort. Regulatory changes such as the imposition of Regulation E* can also result in major software development efforts or the need to make significant changes to existing software systems.

However, just as the advent of small computers has brought the power of the technology within reach for the individual user, it has also had an impact on the costs of system development and maintenance. Consumers now identify applications in which the small computer can provide significant benefit and either write the programs themselves or with help at minimal cost. Generally, the small packages for personal computers which result are used for analytical applications that are often tailored to the specific working habits of the individuals using them. To some extent, the personal computer has replaced the worksheet and personal file system that have always been the tools of the professional analyst and decisionmaker. This software is not suitable for account maintenance and other administrative tasks that require the manipulation of large data bases and the processing of a large number of transactions. On the other hand, a portion of these applications depend on being able to access the major corporate data bases that are maintained by the large, central computer facility.

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*Regulation E is the Federal Reserve Board Regulation implementing the consumer protection provisions of the EFT Act of 1978.

In one example, a microcomputer is used to help farmers generate the information required to support applications for loans. Another application using a voice response unit and input from a 12-key telephone has been developed by a financial analyst to process market data and generate information used for portfolio management. Automated spread-sheet programs running on microcomputers have also become popular tools among users and providers of financial services. Users have found that for some purposes the information generated by a microcomputer running all night can be just as satisfactory as the same data produced in a few minutes on a large, centralized computer. Further, the user of the microcomputer may be able to avoid hassles often encountered when a data processing department is asked to implement an application.

Over the years, the usefulness of applications packages has been recognized across an industry, and significant numbers of packages are now developed and offered for sale or lease to a variety of users. In some cases, the packages were developed by organizations for their own use and later offered to others. In other cases, the package was developed to be marketed commercially. In this environment, all benefit because the costs of development and maintenance are potentially spread over multiple users.

Systems for processing checks and servicing deposit accounts and outstanding loans have been developed by both financial institutions and data-processing service organizations and are widely used throughout the industry. Organizations that have developed the software for home banking applications are actively marketing it to providers.

Thus, as a second option, the user can acquire an application package that comes as close as possible to meeting his needs and then either modify it with internal resources or retain the original developer or another party to make the required changes. This approach has the disadvantage for both the vendor and the user that multiple versions of a basic package must be supported. Costs and difficulty of maintenance are both increased as, almost invariably, the modifications made periodically to the basic package and the changes made to meet specific user needs generate conflicts that require basic changes in the software to resolve. Some marketers of software systems mitigate this problem by including features that permit the user to customize the package at specific points in the processing cycle without actually modifying the basic program.

The third option for the user is to acquire and use an application package as is. This option is more often used by users with small computers than with large. However, operators of large installations are turning with increasing frequency to generalized software packages. Prepackaged software for microcomputers has enabled significant numbers of users in the financial service industry to apply information processing and telecommunication resources to the operation of their businesses without needing to become proficient technically in the operation and use of the technology.

To use these various packages, the user need not purchase or lease the computers on which the applications run. Time on systems operated by others can be purchased, an option that has enabled many smaller providers of financial services to take advantage of available technologies. In many cases, banks and service bureaus that develop application packages also sell the machine time required to run them. In others, those with excess processing resources available sell them. For example, the largest processors of bank card transactions are service organizations, not banks. Check processing and account maintenance is often performed by other than the institution offering the service.

Conventionally, the medium for distributing software is either floppy disc or magnetic tape. Telecommunication links between computers are also used for transferring software. This technique is used to distribute programs for large computer systems and for providing programs stored on large central computers to small peripheral ones in distributed processing environments.

Experience has shown that safeguards against copying or modifying software can easily be circumvented by individuals who have a moderate degree of technical sophistication. This presents a problem to operators of systems for delivering financial services electronically to a large number of people. If the software used to access a service from the customer's premises can be altered, a compromise of system integrity or security could result, causing damages for both the system operator and other users.

One way to avoid this problem is to distribute software in cartridge form, in the form of hardware, a technique that is being tried by at least one marketer of home banking services. Although this minimizes the chances of modifying the software, users whose computers do not accept cartridges are eliminated from the market. Moreover, it does nothing to stop the potential intruder who obtains the functional specifications of the cartridge or is able to copy the program from the cartridge to another medium. In these cases, the intruder could modify the program to perform unauthorized functions, just as it is possible to modify software distributed using other, more conventional media. On the other hand, a major computer manufacturer has announced a microcomputer that accepts program cartridges; this is likely to provide the impetus needed to make this medium of software distribution more widely accepted for financial services.

Applications Software in the Future

The evolution of applications software in the future is likely to be relatively slow because of the huge base of operational programs, representing an investment of billions of dollars, that is now installed.[1] Language development will be constrained because in many areas new languages will have to be compatible with those used to implement the installed base.

Even though there is considerable inertia in the form of installed application systems, application programs will continue to evolve. In the near term, the emphasis will be on modifying batch applications* to operate interactively where it is reasonable to do so. Specific attention is being given to providing the most up-to-date information possible to both users and providers of services in order to improve overall management of financial resources. Even where batch processing is most desirable, transaction data will be entered interactively and accumulated until a batch processing program designed to handle the accumulated data is run. Eventually, however, interactive processing will dominate and up-to-the-minute data will be available to all who need it.

Most programs today have been developed to meet the needs of classes of individuals on the assumption that the requirements of members of a group for computer support are approximately the same. This assumption holds for people engaged in routine activities, but it tends to break down at the upper levels of organizations. In the future, generalized systems and capabilities will be more easily tailored to the specific needs of individuals. Users will be provided the facility to set application parameters to meet their individual needs. Obvious examples that already exist are the ability to request the detail to be used in prompting the computer user online and the format to be used for displaying data. The user unfamiliar with an application can be led through it step by step, while those who have mastered the operations required can be freed of the burden of detailed instructions.

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[1] The material in this section draws heavily on the report, "Future Information Processing Technology—1983" prepared for the Institute of Computer Science and Technology and the Defense Intelligence Agency.

*Batch applications are those when data are assembled over a period of time and are processed periodically, frequently on a fixed cycle.

Applications will be self-teaching to a great degree. Many, as already illustrated by the systems that support ATMs, will be menu-driven; users will not be required to learn and use commands. Today, a growing number include tutorial features; but in the future the user will have greater facility in selecting the specific points where instruction is needed and will be able to obtain help without interrupting the ongoing flow of processing. Audio-visual display technology, heavily dependent on video discs, may figure greatly in implementing this capability.

Users will have a larger variety of options in selecting the format in which data is presented. Color graphics will come into more widespread use and users will have greater capabilities to manipulate graphic images in addition to already existing facilities for manipulating and analyzing combinations of numeric and alphabetic data. For example, the capability of manipulating a trend line for one variable and seeing its effects on other trends will be possible. Mice,* light-pens, and voice input/output will greatly facilitate interaction between the user and information system.

"Windowing" technologies that permit the user to display the results of multiple processes simultaneously on the screen will improve the utility of the technology to the users. They will allow the users to concurrently view data from multiple sources and select those items most useful to the task at hand. For example, the user may use one window to review the status of a transaction account, a second to project cash flow, and a third to enter an order with a broker/dealer to buy or sell a security using a telecommunication line that connects directly to the broker/dealer's computer.

More of the processing capability will be resident at the user site and will therefore be much more of a personal tool. Large systems may be limited to being repositories of data to which the user is provided access on a "need to know" basis. At the start of a problem-solving session, a microcomputer will be used to access a data base on a large computer system, retrieve the data needed to address the problem, and store it locally on a small disc. Applications running on the microcomputer will perform the required analysis, and after this has been completed, the central data base will be modified as required. In fact, in some organizations, this mode of problem-solving is already quite commonplace.

Knowledge-based systems, one of the areas in the general field of research known as artificial intelligence, will become more generally available. For the financial service industry, this could mean that financial advisors and counselors will be augmented, or possibly replaced, by automated systems. Research in artificial intelligence and expert systems has shown some valuable results. However, there is considerable uncertainty about when such systems will be sophisticated enough to have an operational impact on the financial service industry.

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*A mouse is a small device attached to a computer that is used instead of keys to control the movement of the cursor, the indicator on a video display that indicates where the next character will be formed.

Telecommunications Technologies

Telecommunication technology provides an indispensable lifeline to users and providers of financial services. Of the number of alternative telecommunication technologies from which suppliers and users of financial services are able to choose, the most common is the switched telephone network. But, both providers and users of financial services also construct and use a variety of alternatives, which include such diverse technologies as private microwave links, satellite transponders, video cable, public packet switched networks, leased lines, and local area networks.

The divestiture of the operating telephone companies by American Telephone & Telegraph (AT&T) in 1984 substantially changes the communication environment in which providers and users of financial services operate. Both local and long-distance telephone rates are likely to change. Competition from non-Bell suppliers of telecommunication services and equipment is already significant and is likely to increase in magnitude and kind in light of the divestiture. Those who enter markets as providers of equipment and services are likely to intensify competition further.

Both suppliers and users of financial services are heavily dependent on telecommunication services, and as systems to deliver financial services directly to customer premises become more widely deployed, this dependency will increase. Securities markets, card and check authorization systems, and cash management services are now totally dependent on telecommunication. Products such as remote banking and shopping and off-market securities trading have a dependency equally great. The premium placed on timely financial information is increasing, and the only way to meet this requirement is through the application of communication technologies. Changes in the technologies, policies, and economics of communication will directly affect the design of systems for delivering financial services, the cost schedules facing both users and providers of financial services, and, hence, the structure of the financial service industry.

Photo credit: Racal-Milgo Corp.

Network control console like those used to manage major financial service telecommunication networks

The Switched Telephone Network

The most widely available communication facility is the switched telephone network that serves virtually every place of work and residence in the United States. Only a limited number of locations can send and receive telecommunication traffic without using this network for a portion of the route. Subscribers to non-AT&T long-distance networks generally access them through the facilities of local operating companies. In fact, some of the alternative services actually use long-distance circuits provided by AT&T.

The switched telephone network is basically designed to handle analog voice traffic. Generally, digital data sent between computers and between computers and terminals must be converted from digital to analog format for transmission through the network. Network facilities capable of carrying the digital signals and thus eliminating the need for this conversion/reconversion process are now coming into use and will eventually replace the analog links in the system. In this environment, voice as well as data will be transmitted through the network using a digital format.

The switched telephone network was designed to handle a relatively large number of calls of short duration in which the parties are speaking a high percentage of the time the connection is maintained. A circuit is established between the parties for the duration of the call. Whether or not there is traffic on the connecting circuit, the facilities used to maintain the connection are denied to others. A POS terminal connected continuously through the switched telephone network may be used only intermittently. Although this constitutes an inefficient use of network resources, a merchant may desire to maintain such a connection in order to minimize the time required to process a transaction at the point of sale.

The common telephone is by far the primary terminal used with the switched telephone system. Although it functions well for voice communication, its capabilities as an instrument for data entry are limited, and those for receiving other than voice response are almost nonexistent. The 12-key tone pad is a moderately effective data entry device that can be used to transmit numeric data to a computer with relative ease, but it transmits alphabetic data awkwardly. It has been used for applications such as telephone bill paying and balance inquiry. In those locations where tone service is not available, an easily acquired attachment to the traditional dial telephone or widely available dual-mode instruments allows the user to transmit the tone codes required for certain services. This operation requires use of either a tone generator placed over the microphone of the handset or a type of telephone now available that can switch between dial pulse and push-button tone operation. With either, the customer can make a connection using conventional dialing and then switch to tone output to communicate with an electronic device. If financial service providers' applications can conform with the capabilities of the voice telephone as a data communication device, a significant portion of the Nation could have immediate access to computer-based financial services. Marketers of such services have been limited in the past by the lack of capabilities of the stand-alone telephone as an input/output device. If successful market penetration occurs, home computers may offer a more viable alternative for delivering service.

Presently, commercial users in some areas have specialized, switched digital service. In the future, virtually all customers will have digital network service available, primarily through the digital termination services planned by operators of the switched telephone network. As outlined in greater detail in the next section, each digital line will have substantially more capacity than is now available in the conventional voice circuit and will be considerably more versatile.

Wide Area Telephone Service (WATS) is a specialized service offered through the switched telephone network. This service allows a fixed number of hours per month of calling for a specific geographic area. IN-WATS permits incoming calls at no charge to the caller, and WATS, or OUT-WATS, permits the subscriber to originate calls using the service. IN/OUT-WATS permits both. Financial institutions and others use this service to expand their markets geographically without establishing physical presence in the targeted areas. The availability of toll-free calling encourages the remote customer, who might be unwilling to incur a toll call charge, to contact the institution. The service is particularly valuable to depository institutions that face restrictions on the geographic areas in which they can establish facilities.

In addition to the common voice telephone, many other types of communication devices can be attached to the switched telephone network. Included are computers, simple terminals, and facsimile terminals. These can provide for interaction with humans and/or unattended operation. However, all currently cost more than the voice telephone Service providers must recognize this cost differential when planning the deployment of a system that depends on the user acquiring the required terminal equipment.

Private-Line Telecommunications Facilities

Many commercial organizations and government agencies use leased circuits for their internal communication needs. Providers of financial services are among the heaviest users of such facilities, and some operate large global networks for moving funds and information.

A leased circuit guarantees access to a circuit between the points that meets specified electrical characteristics. This eliminates the problems of uncertain quality and relatively slow access* when dial-up lines are used. While there is no assurance that the same physical circuit will be made available at all times, or that the signals will not be multiplexed with others between various points along the route, the quality of the line becomes invariant from the user's point of view. This minimizes the variability of one of the elements critical to overall reliability and integrity of financial service systems.

Institutions with sufficient need and funds can install their own circuits; in some cases, private microwave networks have been established. Fiber optics and coaxial cables are used for networks confined to a limited area, such as an office building or factory complex. Some have leased transponders on communication satellites, and others have leased circuits on video cable systems. Financial service organizations are among the heaviest users of the video cable that runs from midtown Manhattan to the Wall Street area in New York City. Aetna Insurance Co. is one of the three primary partners in Satellite Business Systems, a major communication venture. New technologies will increase such options. For example, the installation of teleport facilities will make satellite communication available to a larger community of users and offers the opportunity to bypass local telephone facilities completely. Merrill Lynch is one of the major backers of the teleport installation planned for New York. Fiber optics offers greater capacity and security of transmission than do copper conductors of comparable size, properties that are particularly attractive in areas like the financial district in New York, where the available space in conduits for wires has been almost exhausted.

A communication technology of growing importance is local area networks, which are installed within an organization's facilities to provide a variety of communication services, including the transmission of both voice and data. Digital, private, automated branch exchanges are being installed to manage some of these networks. Others have been developed by manufacturers of office computer equipment and emphasize such features as sharing of data resources and electronic mail.* Characteristically, all of these networks provide gateways to the switched telephone network, including the private, value-added carriers and any private networks to which the user may have access. The user of a local area network with gateways to the switched telephone network has access to all of the data and processing resources that comprise the local network and, using the same terminal equipment, to other facilities that are external to it.

All of the classes of equipment that will operate with the switched public network will also operate with private networks.

Alternatives to Switched Networks

Because the switched telephone network, where "hard" connections are established and maintained for the duration of a conversation between the parties, is not particularly well suited to traffic that is characterized by relatively short bursts of activity separated by long periods of silence, alternative technologies more suited to data traffic are used by providers and users of financial services. POS, ATM, and home banking systems, as well as others that use interactive computer facilities to deliver financial services, are characterized by this kind of bursty traffic pattern.

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*The time required to dial a number and go through the logon procedures that must be used in a dial-up environment.

*Electronic mail is the technology of sending messages electronically between computers. Messages are stored on the addressee's computer system to be retrieved, read, and disposed of at his/her convenience.

One of these is packet switching, in which messages are broken down into small packets, each of which is routed separately through the network. One property of this technology is that the cost of communication becomes more a function of the volume of traffic handled than the distances involved. Also, there is minimal penalty for having a network that includes a large number of points between which only limited traffic volumes pass. Because it is oriented to handling messages that are fairly short in length and are spread over considerable periods of time, packet switching is particularly suited to the type of traffic likely to be generated by providers and users of financial services. POS systems and systems for trading securities are candidates for this technology.

Multiplexing, a well-established and widely used group of technologies that permit a communication circuit to be shared more or less simultaneously by multiple users, is also of interest to providers and users of financial services. These technologies permit a single, high-capacity circuit to be used for various applications, none of which could alone justify the expense of a dedicated line. For example, if local communication costs rise, as some predict, the operator of a shopping center could establish a connection to a financial network or a specific financial institution that would permit the merchants access to POS services at lower costs than if communication services were paid for independently. This could be done by connecting to a specific institution, thus eliminating choice of a financial service provider for individual tenants of the shopping center. On the other hand, the shopping center owner could conceivably provide access to a gateway that would permit individual merchants almost unconstrained freedom in selecting financial service providers.

Video-Related Communication Technologies

Considerable attention has been given in recent years to using technologies built around some modification of the common television set for distributing information, including financial services. The services offered are generally built around alphanumeric displays of information that fill one television screen. The quality of graphic capabilities varies from system to system, but none presently offers any significant degree of animation. However, with some systems, computer programs will be transmitted to the user's terminal at relatively low speed and then executed in the customer's terminal to produce animated graphics. One application for this technique is the distribution of video games; other applications are likely to follow.

While video-based systems have been somewhat accepted in Europe, they are still in the experimental stage in the United States, where only a limited number of systems is in operation. One of the principal drawbacks encountered is the price of a modified television set or specialized terminal capable of participating in the system. Three general types exist: teletex, videotex, and cable television.

In teletex, frames are transmitted over the air during the blanking pulse in the television signal, the period when the raster on the television returns from the lower right corner of the screen to the upper left. Because the technique repeatedly transmits a limited number of frames that can be selectively captured by the terminal equipment, the capacity per channel for offering adequate response to users is limited to about 25 to 100 frames. This is essentially a one-way system because there is neither a path over which the user can respond to the system nor a means for sending a signal to a specific receiver. Users can, however, use a telephone connection to transmit to the system. Conceptually, an address routing message to a specific receiver could be added to the transmitted frame, but the limited capacity of the channel would effectively limit such an application. Full-frame teletex, an alternative to transmitting the textual information during the blanking pulse, is the dedication of a channel to a telex application. Capacity could then increase to about 1,500 frames per channel. Application of this technique is generally limited to dissemination of advertising and bulletin board type of information. Included could be price quotations, but it would not be possible to tailor the information to the needs of a specific subscriber. Transaction initiation, except through the use of an auxiliary channel such as telephone, is not possible because there is no direct path from the user to the source of the information.

Videotex generally uses the telephone network to transmit the required information to users, who are able to interact with the information source, selecting material from a large library that is directed only to the user's television set or personal computer display. A very large number of frames is available, and it is possible to charge for each frame viewed (the user requests specific frames). Some applications, such as those related to financial services, permit the user to enter data that is then processed (e.g., a mortgage amortization schedule is produced when the user enters principal, term, and interest rate). Because data is directed only to a specific terminal, personal information such as account balances can be delivered using this technology. The capacity of the telephone channel limits the degree of animation that can be offered, and the data transmitted is generally confined to text, numeric tables, or fixed graphics.

The third technique, cable television, uses video cable, with all of the transmission capacity inherent in that medium. The Warner-Amex QUBE system that has been operating in Columbus, Ohio, for some time offers considerable capabilities for delivering text to specific users and a low data rate return channel for reacting to specific user input. It therefore has considerable potential for delivering financial services. This system includes provision for interactive response from users to questions posed by the program being transmitted. Applications include all of those possible with videotex and others that can make use of the capacity of the television cable. Large amounts of data, such as historical stock market information, can be transferred rapidly and loaded into a user's computer for processing at a convenient time.

Future Telecommunication Technologies

Generally, telecommunication technologies will continue to provide the means by which financial and payment information is transmitted rapidly from point to point. In many ways, the specifics of telecommunication technology are of minor interest to users and providers of financial services. As long as sufficient capacity is available at an affordable price, the needs of the financial service industry will be met.

While voice communication will continue indefinitely to dominate the traffic handled by the common switched telephone network, transmission technology is changing. Digital transmission will replace the analog signals now used most commonly. Voice will be digitally encoded and will share circuits with data, video, and facsimile transmissions. This will mean that users of telecommunication services will be able to interweave voice and various forms of data on the same circuit. Systems that offer these capabilities to commerical customers are being marketed. For example, a financial service consultant is able to send a table of data showing the expected results of alternative investment opportunities for display on a client's terminal in the midst of a normal conversation. Even now, terminal devices capable of supporting such usage patterns are coming on the market.

The concept of a telephone industry ISDN (Integrated Services Data Network) is emerging and will reach fruition sometime before the end of the century. An ISDN is a network in which all traffic is represented digitally, and various types are freely mixed as traffic passes from origin to destination. However, because of the magnitude of converting the installed plant, ISDN capabilities may not be available to significant portions of the subscribers to switched telephone services for some time beyond the turn of the century. Further, while there is now no compelling reason for making ISDN generally available to consumers, there is a distinct possibility that a force driving in that direction will emerge and will hasten the deployment of ISDN. For example, if consumers become heavy users of information utilities, their needs for transmitting and receiving significant volumes of data could stimulate development and deployment of ISDN facilities.

Users of telecommunication systems built in accordance with the ISDN concept, or a less general one called "Digital Termination Service," that shares many concepts with it, may be provided with a single high-capacity communication line. The capacity of this line would then be allocated among various applications at the user's discretion. Some may choose to use it for multiple voice lines, while others may allocate a portion to data and another to voice. Allocations could be changed dynamically in response to user needs. At one point, several people could be using the facility for a number of simultaneous conversations, which could include conference calls. At another point, a single user could use part of the capacity to carry on a conversation, while the remainder is used to access information resources. Using advanced software technologies, the user could also interact simultaneously with multiple information providers. For example, an individual may review account balances, along with economic statistics and historical data provided by independent vendors of information services, in formulating investment decisions.

Although one could assume that the vehicle for implementing ISDN will be the framework provided by the switched telephone network, there is no technical reason why this need be the case. Most private locations, such as homes and places of business, will be able to have telecommunications delivered over at least two types of networks, switched telephone and video cable. Either could be used to implement ISDN-like concepts. The cable television systems may enjoy some cost and bandwidth advantage over the telephone network. The transmission capacity of a cable is much greater than that of most ordinary telephone circuits, and the cost of serving a subscriber is less.

Designers and users of financial service systems will be able to choose from a variety of telecommunication technologies in designing and accessing services. Some new telecommunication technologies will have greater capacity than the switched telephone network of today, but development of new techniques to extend the capacity of the present telephone plant are evolving. For example, dial telephone lines are now routinely used to transmit at 2,400 bits per second, a rate that could not be realized with acceptable error rates several years ago, and rates as high as 9,600 bits per second are becoming possible. Switched telephone networks are expected to evolve slowly from conventional copper wires to fiber optic circuits. Fiber optics have transmission capacities far greater than those of the present copper conductors. However, as is now the case, some network segments will always be carried by radio transmission, as exemplified by the use of microwave and satellite facilities.

Technologies such as cellular radio and digital termination services are now being offered commercially for the first time. These are expected to come into widespread use by the mid-1990's. In addition, direct broadcast satellite systems will soon become operational and may be used in some systems for delivering financial services.

There will be a diversity of telecommunication networks in the coming years. Various vendors of telecommunication services and technologies will try to offer systems that most effectively serve certain classes of users. While there is a proliferation of systems, vendors recognize that they will have to provide for the interoperability of communication facilities. Gateways between private networks and public transmission facilities are now almost mandatory. Thus, users and providers of financial services will be able to communicate between and among themselves with minimal concern for the particular technologies used in implementing financial service systems. The emergence of other alternatives to conventional switched telephone services should be expected over the coming 10-year period. These new services will almost certainly offer opportunities of value to both users and providers of financial services.

Now, and probably more so in the future, numbers of telecommunication options available to all users, including individuals, will be available. Users will be able to closely align services procured with needs. But the full benefits of the ability to choose from a range of options will be realized only if the customer expends the effort needed to evaluate the alternatives. In all likelihood, independent development of system designs and seeking the vendor best able to meet the need will be required. Not all potential users who could benefit from this approach will be prepared to take it, with the result that they will probably settle for something much less than the best available communication facility at the most advantageous price. To the degree that communication costs become relatively more significant for providers and users of financial services, this shortfall could affect their basic ability to compete in the market with others not carrying a similar burden.

System Security and Integrity

Security has long been an area of concern to providers and users of financial services. Traditionally, banks have been characterized by large metal doors and imposing vaults with massive and complex locking mechanisms. Financial service providers stress the safety of assets in attracting customers, and customer trust is a keystone of the financial service industry.

Increasing use of telecommunication and information-processing technologies in conjunction with financial services raises two areas of concern that relate to the basic soundness of the financial service industry: system security and system integrity. System security deals with the problem of those who would attack the system from the outside, including those who work with the system but would attempt to invoke operations they are not authorized to perform. System integrity addresses the problems that arise with recovering a system without loss of data in the event of a failure.

System Security

As demonstrated by the young people in Milwaukee in 1983, it is not difficult for individuals with minimal equipment and training to penetrate some computer systems which contain sensitive information. In the Milwaukee caper, one of the computers compromised, using a common home computer and telephone line, belongs to a major west coast bank. Other instances of penetration of computers used by providers of financial services are on record; and some experts believe that only a relatively small portion of the security breaches that occur are detected, and fewer are reported outside of the victim organization.

Historically, embezzlers from within and check forgers and confidence artists from without have threatened the financial service industry. Computers, particularly those accessible through telecommunication networks, add new dimensions to the vulnerabilities of financial service providers. In a high-technology environment, the assets of an organization and the proprietary information on which it bases its business operations are subject to remote-access thefts.

Attacks on financial institutions through their own processing systems can directly victimize those institutions' clients. A thief who robs a bank at gunpoint steals from the institution; the electronic thief can reach directly into the accounts of individuals. The burden of detecting the crime, reporting it to the organization holding the account, and recovering the lost assets could shift from the institution to the account holder. When the thief's booty is information rather than financial assets, neither the specific individual nor the institution affected may ever become aware of the fact that the system has been penetrated.

Threats to a system can materialize both from within and outside the target organization. Employees throughout an organization can individually or in concert attempt to compromise a system. Technical personnel can modify operational programs or write new ones to perform improper operations. Similarly, nontechnical personnel can seek to perform operations not authorized to them or misuse powers with which they are entrusted.

Programers have written codes that credit the fractional cent from an interest computation to their personal accounts and fail to report properly the overdraft conditions in those accounts. Some programs to perform unauthorized operations destroy themselves after completing their task, leaving no trace of their existence. A few people used computers to create and maintain millions of dollars worth of bogus insurance policies in the Equity Funding case, a task that would not have been possible without the technology.

Conceptually, it is possible for anyone to use international telecommunication facilities to attack financial institutions without ever coming within the jurisdiction of American law enforcement officials, much less being in close physical proximity to the institutions they are attacking. With relative impunity, individuals or organizations could launch their attacks from any telephone, including those in motel rooms and pay stations, from which they could operate undisturbed for brief periods. At least one computer now on the market fits nicely into a large purse and can be used to initiate an attack on a financial institution from any location where a standard modular telephone connector can be found. Some devices can be set up to operate unattended, and then retrieved.

Not all attacks on financial service systems must be so sophisticated. Individual consumers of financial services and various user organizations have demonstrated a marked yet unwitting ability to aid the thieves who would victimize them. Personal identification numbers (PINs), given to account holders to use in depositing and withdrawing money from ATMs, are written on access cards. Telephone numbers and key access codes are written on communication terminals and bulletin boards in clear view of those unauthorized to have them. In one instance, an enthusiastic user of an ATM demonstrated the use of the machine to a complete stranger and, in the process, revealed his PIN to all within 20 feet. A variety of comparatively simple scams, that range from asking individuals for PINs and the use of their cards to retrieving used carbons showing account numbers from the trash cans of organizations that accept cards in payment of accounts, have been used to compromise financial service systems.

Computer-to-computer communication is now used to initiate and execute a substantial number of financial transactions, a practice that will become more widespread in the future. Therefore, the problem of authenticating the "signature" of a computer that participates in financial transactions in order to authenticate the transactions will become as critical as that of establishing the identity of human users. Although under study, no such technique has emerged that shows promise for wide adoption by the financial service industry. Finding a solution that will be acceptable for use by individual consumers and others not sophisticated in the design and operation of advanced technological systems constitutes the most difficult subset of problems in this area.

Providers of financial services, aware of the threats to their systems, are taking steps to tighten security. Various devices and techniques exist for minimizing the vulnerability of computers and communication networks used to deliver financial services. The use of data encryption techniques is growing, and a system in which the PIN is never accessible in clear text to any human is available and in use by many financial institutions. Physical security around computer facilities is the focus of considerable attention, and research designed to overcome the known weaknesses of the PIN as an access code is continuing. Nevertheless, human ingenuity and fallibility will probably counteract attempts to provide foolproof security for computer systems.

System Integrity

All systems, whether manual or automated, will at some time fail in the sense that operations will be interrupted for a period of time. Such interruptions may be the result of attack by an outsider, natural calamity such as an earthquake, or the inadvertent error of an authorized user of the system. Thus, systems must be built so that they can be restored to full operation without loss of data or transactions in process at the time of failure. This is a particularly important factor in delivering financial services because lack of system integrity could result in a situation where the level of confidence so essential to the viability of such systems is degraded.

The problem of providing for system integrity is largely a technical one. Increasing use of telecommunications adds new dimensions to the problem, but a number of well-accepted practices aimed at ensuring system integrity exist. It remains for the operators of financial service systems to ensure that those practices are followed during the design, implementation, and operational phases of the system lifecycle.

Specific Technologies for Delivering Financial Services

Applications of general-purpose information processing and telecommunication technologies specific to the needs of the financial service industry have been developed. Included are technologies for accessing systems and handling items such as cash and checks that are unique to the financial service industry.

Card Technologies

Embossed/Magnetic Stripe Card

The embossed plastic card with a strip of magnetic tape embedded in the back has become almost ubiquitous. This device provides the primary means for accessing credit and debit services that are delivered through both paper-based and electronic systems. Commonly, the card is presented at the point of sale, and an impression is taken on a paper document that is then processed. Most often, the consumer is making use of a credit service and is billed by the credit provider. Today, embossed plastic cards are also used to originate debit transactions that are processed over the same network as credit transactions.

Generally, the data are recorded on the magnetic stripe on the card by the card issuer before it is sent to the account holder and they are not changed during the life of the card. This striped card has room for about 1,000 bits of data. Allowing for the information that must originally be recorded on the card, there is just not enough room to record transaction data. Technologically, however, there is no reason why data on the stripe could not be altered after issuance. On the other hand, the limited capacity of the stripe and the cost of deploying sufficient terminals with the capability of recording data on the stripe makes this device generally unsuitable for applications that would require changing the data repeatedly. Also, the stripe is easily readable, eliminating the possibility of building security into the card.

However, the same basic technology is used in the Washington, D.C., subway farecard system. When a farecard is purchased, the amount is recorded by the machine dispensing the card. Each time it is used, the starting point of the trip is recorded, and when the passenger exits the subway system, the amount of the fare is computed and deducted from the balance on the card. In this system, the magnetic stripe is mounted on a paper backing, and the card is generally disposed of after only a few cycles, a lifetime that would not be suitable for a card that is to be used repeatedly over an extended period.

Data on magnetic stripes are read by ATMs and special terminals used by some merchants at the point of sale. Merchant terminals primarily facilitate the process of obtaining a transaction authorization from the card issuer by eliminating the requirement for either the clerk in the store or an authorization clerk at the issuer's facility to key in the account number. Some merchant terminals also print the necessary information on the paper document, further reducing clerical workload.

Among the problems with the embossed/magnetic stripe card is that it is relatively easy to copy or counterfeit. Several technologies have been developed to overcome this problem. Data can be recorded in the laser card by burning pits in a reflective material that can be sensed by an appropriate reader. Once recorded, the data can be neither altered nor erased. Holography is being used on some card blanks to create a background image that is very difficult to reproduce.

Laser Card

The laser card, or memory card, is just making its debut. At this date the laser card is not used by the financial service industry; however, its potential use is likely. As described by S. Berton Latamore:

> The card can store digital data signifying the bearer's fingerprint, voiceprint, or even the pattern made by capillaries in the retina. A stand-alone card-reading machine, equipped with a microprocessor, would check whether this biological data on the card matched that of the card-holder. The card is being developed by Drexler Technology of Mountain View, Calif. The company's Drexon card stores 1.2 megabits, or roughly 30,000 words—nearly 1,000 times more than a magnetic stripe card.
>
> The Drexler cards are coated with a two-layer plastic film. The top layer is embedded with microscopic pieces of silver, giving the material a highly reflective, metallic look. To write data, a low-power laser melts pits in the top layer to expose the unsilvered—and unreflective—bottom layer. To read the card, a laser scans the surface, and a photodetector senses the presence and absence of pits as highs and lows in the intensity of the reflected light.[2]

Unlike the magnetic stripe, the laser material cannot be erased and rewritten; pits are physical holes that cannot be refilled.

Electron Card*

Electron cards, first distributed in early fall of 1983 by VISA, U.S.A., combine three encoding technologies on the back of the plastic card—the banking industry's magnetic stripe, the retail industry's optical character recognition, and the universal product code bar code.** The card, which is not embossed and cannot imprint paper forms, is an attempt to embrace both the banking and retail environment with a move toward a more secure electronic environment than presently exists. The card will feature a direct debit option but will also have the capabilities of a credit card. It presently replaces proprietary ATM access cards. A full-scale POS project is expected to get under way in mid-1984. The card will migrate to full-service use at points of sale.

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[2] J. Berton Latamore, "Putting Intelligence in Your Market," *High Technology*, published by High Technology Publishing Corp., June 1983, p. 16.

*"Electron" card is a trade name for a VISA card.

**Optical character recognition (OCR): the process of reading a stylized type face with an optical sensor. Universal product code (UPC): a bar code now imprinted on many items that is read by a suitably equipped terminal.

Use of the electron card is intended to reduce the number of paper checks, resulting in lower processing costs, less fraud, and faster service at the point of sale. Cardholders will have electronic access to cash through a global network of ATMs and to goods, services, and cash at many locations. Authorization will be provided electronically at the time and point of each transaction and will be fully controlled by the card issuer.

The processor card, or "smart card," developed in France, contains a tiny embedded computer chip with about 1,000 times the storage of the conventional magnetic stripe. However, once data are recorded in the memory, they cannot be simply altered, and their memory cells cannot be directly reused. The smart card contains processing capabilities that enhance its security and flexibility. A standard for its format has recently been adopted, eliminating some of the uncertainty that may have been limiting its adoption. The user plugs the card into a terminal that then queries the card memory as part of the processing to validate the transaction. Once authorized, the transaction data can be recorded in the card's memory for later retrieval. With present technology, the card costs in the range of $5 to $10 and is good for approximately 200 transactions before its memory is full.

Even though Carte Bleu, a group member of VISA International, France, has begun placing chips in all its VISA cards, the future of the smart card is uncertain. Some suggest that it represents the wave of the future, while others see it as a technology in search of an application. If it is to come into widespread use, merchant terminals will have to be generally available. Development of a card with reusable memory could also enhance the utility of the concept.

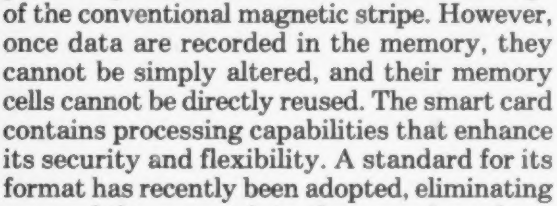

Photo credit: High Technology, June 1983

The French smart card contains a microprocessor capable of interchanging information with another computer

In its current form, the smart card is a modification of the conventional plastic card it is intended to replace. It contains a microprocessor chip, but because it includes neither a keyboard nor display, it can be used only with a terminal device that provides power and the appropriate input/output capabilities.

However, there is no reason why a smart card that includes a keyboard and display could not be built. Calculators that are no larger than the card are available with such features; and an interface to a merchant or financial institution terminal could be provided. Such a card could include in its functions the ability to determine the balance remaining and to review the transactions for which it has been used. Multifunction cards that contain more than one processor could also be built.

The smart card could evolve as an alternative to cash following the general model of the fare card used by some subway systems, including that in Washington, D.C. The user could "charge" the card with funds from a depository account and the funds would be decremented for the amount due each time it is used. Terminals for recording value in the card could even be located at home, giving the consumer the ability to obtain the equivalent of cash. Card readers could be provided at each cash register or POS terminal to allow a consumer to verify the card's balance. Hard currency dispensers, rather like the common change machine, could allow the smart card to serve as the equivalent of a large-denomination bill.

In the future, applications of card technology will become more widespread. Already, there are telephones which accept magnetic stripe cards and other vending machines may

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à carte

Photo credit: IEEE Spectrum, February 1984

A newly designed pay telephone produced by Flonic-Schlumberger in Paris accepts smart cards. It is being deployed by the French Government's Telecommunications Administration

be designed to accept them also. As the facilites for online transaction authorization and direct debit of accounts from point of sale are deployed more widely, the utility of card technology will increase. In the long run, however, the plastic card could be displaced if a secure, practical means of user identification that depends on the physical characteristics of the individual could be developed as an alternative. Signature dynamics, fingerprint readers, and sensors that process the pattern of blood vessels in the retina of the eye are technologies that show some promise. It remains to be seen which, if any, will ever be operational.

However, all of the security features that could be implemented have flaws. For example, if an intruder can capture the digital representation of a fingerprint before it is encoded and inject it into a system being attacked, the user's "key" will have been compromised. When this happens with a conventional PIN, a replacement code is issued and the old one invalidated. The question that follows the compromise of a fingerprint or a retinal pattern is: "What replacement code is to be issued?" On the other hand, if the data stream associated with a system that uses the signature dynamic is compromised, a possible replacement could be some alternative phrase with which the user identifies himself.

Document and Currency Readers

The cost of processing billions of paper items is becoming prohibitive for an industry losing some of its principal sources of revenue, and the pressure to find lower cost processing alternatives is intense. Reading of checks encoded with magnetic ink has been commonplace for over a decade, and credit card vouchers are generally transferred to magnetic tape for processing. However, aside from some limited applications such as making change, financial document readers are in very limited use in the United States.

One of the major suppliers of ATMs has announced a model that will accept and timestamp individual checks. It will also be able to dispense currency and coin in any amount. Models that accept and count Japanese currency are already in use. Thus, the technology to provide deposit verification by the ATM is

Photo credit: Burroughs Corp.

Reader/sorter processes checks and other documents at the rate of 1,625 per minute just over the horizon and is likely to increase the utility of these machines substantially.

Systems that process credit and debit card transactions already truncate the paper flow at the earliest practical time. Instead of moving paper, the data are recorded on magnetic media and transferred electronically for processing by the card issuer. Documents are coded so that they can be retrieved if necessary. Moreover, credit unions and savings and loan associations generally do not return drafts on NOW accounts to the account holder, also truncating paper flow. However, with relatively few exceptions, commercial banks still return canceled checks with monthly statements; and attempts to stop this practice at least for individual accounts have met with considerable resistance.

In the long term, however, banks and other depository institutions will develop and deploy systems in which checks are truncated or terminated at the bank of first deposit. Issuers will be provided the means for retrieving either the original or an acceptable photocopy if needed. The issues standing in the way of such a change are related more to legal and market problems than to lack of suitable technologies. For example, who in such a system would be responsible if a forged check were processed against an account? Consumers use and hold canceled checks in lieu of receipts, especially for tax purposes. What alternatives would be acceptable to the Internal Revenue Service?

Photo credit: Burroughs Corp.

Document encoder used to record data on checks in a machine-readable format

Customer Service Equipment

Cash dispensers were the first terminals made available for customer use by financial institutions. These were followed by the multifunction ATMs now in widespread use that are capable of initiating bill payments, transfers between accounts, and other types of transactions, in addition to accepting depos-

Photo credit: Diebold Corp.

Inner workings of an automated teller machine its and dispensing cash. The functional capabilities of these machines are continuing to increase and they are becoming capable of handling increasingly diverse kinds of transactions. Counter to this trend, however, some institutions are making available specialized machines to perform balance inquiries and are supplementing full-service ATMs with cash dispensers so that customers requiring only cash will not have to wait behind those with more complex transactions.

There may be a movement to customer service machines that have a wide range of capabilities. Some may be of limited purpose, for such applications as cash dispensing and balance inquiry. Others may have the capabilities of the ATMs of today: accepting deposits, moving money between accounts, paying bills, and dispensing cash. Still others may be used for time-consuming but infrequent transactions, such as the filing of a loan application or ordering securities transactions.

In the future, a number of "customer work stations" could be available in a lobby area. These could be configured so that the customer could sit at a desk and accomplish a number of tasks, including making a deposit or withdrawing funds. Then, when the bulk of the work is finished, the customer could go to a device supporting many terminals that accepts the deposit or another that would dispense cash. Express terminals for customers with limited needs could also be provided.

Bank branches without human tellers are operating, and some institutions are shrinking their networks of full-service branches. Some of these automated branches provide only telephone communication for the customer in need of assistance. Others are manned by a customer representative who is available to answer questions and market services, but who performs none of the teller functions, such as accepting deposits or paying withdrawals.

Technology and the Structure of the Financial Services Industry

One of the impacts of present and future technologies on systems for delivering financial services is that there is a real possibility of redistribution of function between and among traditional suppliers and potential new entrants. Whereas the payment system has been reserved largely by the banks, because only they have access to facilities for clearing and settlement, movement of funds electronically makes it possible to avoid the traditional payment system and to effect net settlement directly between members of a community that have agreed to the necessary implementing conventions. Alternative means of distributing information could diminish the role of brokers for such varied products as securities, real estate, and insurance. Telecommunication systems that are capable of message switching are implicitly capable of performing the interchange function for payment networks. Retailers and other cash-oriented businesses, such as gas stations, are motivated by losses from bad checks and card fraud to take steps that minimize their exposure. For example, an ATM in a supermarket has the potential for relieving the requirement to cash checks while minimizing the amount of currency and coin that is held at each store location and subject to theft.

On the other hand, what is technologically feasible may be neither possible nor desirable. Consumers may balk at accepting new service delivery mechanisms. Legal/regulatory constraints may limit options, and the potential providers of the services may opt not to implement them for any of a variety of reasons. Further, changes in the technologies modify the parameters that bound system design alternatives. Those that are attractive now may become undesirable in the future, while new alternatives not now feasible may emerge.

Appendix 2A: Hardware Components

Chip Technology

The fundamental building block for information processing and telecommunication is the silicon chip. Many thousands of electronic components, constituting an infinite variety of electronic circuits, can be fabricated with these chips. The newest computers have memory chips capable of storing 64,000 bits of information; chips capable of storing 256,000 bits of data are now emerging. Chips with 1 million electronic components are in the laboratory stage of development.

Processor chips used in today's large microcomputers tend to include only the functions needed for performing the required logical and arithmetic operations. Memory for data storage and circuitry to facilitate the movement of data between the processor and various peripheral devices such as disc drives and telephone communication links usually require additional chips mounted on the same printed circuit board as the processor. A single chip which includes the processor, memory, and other supporting circuits, is in widespread use for many appliances and devices. But most of the home computers and larger units separate this functionality into several separate chips.

Silicon chips in use today tend to be less than one-quarter inch on each side. Dr. Gene Amdahl has suggested that it may be possible to fabricate economically chips that are several inches on a side. If so, performance-to-cost ratios for electronic equipment could rise significantly because the larger size would limit the need for physical interconnection between chips which is one of the major costs of fabrication. One of the major factors reducing the cost of consumer products, such as home computers and video games, has been the decrease in the number of chips required in these devices as it has become possible to pack more and more onto a single chip. Also, because the speed of an electronic circuit is limited by the distance between its components, the ability to manufacture very large chips could translate into significant increases in processing speeds for the devices that use them.

Computer Systems

A computer system consists of a number of subassemblies that are collected in much the same manner as a component high fidelity system. It includes a central processor, high-speed random access memory to which data and programs are moved when they are active on the system, and peripheral storage devices, such as disc and tape drives that store data and programs not immediately needed by ongoing processing operations. Additional components, depending on the system configuration, might be printers, card readers, and devices specifically designed to handle the telecommunication function.

The heart of any computer system is its central processor. It is the subsystem that performs the instructional program written to support a specific application. Processors can be fabricated on a single chip or may require several cabinets of components. For any type, the key to increasing speed and minimizing costs of fabrication and operation is to minimize the physical dimensions of the processor and the number of discrete components required.

Most modern systems use more than one processor. In a small desktop computer, for example, one processor on a chip may perform the primary work of a machine while other processors perform supporting roles, such as generating the characters on the screen of the terminal through which the user communicates with the system. Large systems may use networks of processors to perform the variety of functions required of a machine. Small systems are capable of tens of thousands of operations per second, and some larger commercial systems can perform millions of operations per second. Computer systems capable of billions of operations per second are just over the horizon.

The central memory of a computer contains the program instructions and data that comprise the elements of an application system when it is active. A small desktop computer may have storage for as few as 1,000 characters of information, while large systems used by providers of financial services may have main memory capacity measured in tens of millions of characters. More commonly, desktop computers with main memory capacities ranging from 48,000 to 256,000 characters are used for financial service applications both by individual users and providers of financial services. Even though some financial service applications can run on computers with as little as 16,000 characters of main memory, computers with memories much smaller than 48,000 characters tend to be too small to conveniently hold the programs and data required for serious financial services applications. Larger systems used by providers of financial services include main memories that commonly range in capacity from 1 million to 8 million characters.

Disc drives, another system component, have large capacities relative to the main, random access memory of a computer and permit processors to access individual records in a fraction of a second. For example, the interchangeable floppy discs used with a computer having 48,000 or so characters of main memory will have a capacity of 100,000 to over 1 million characters. Hard, noninterchangeable discs used with such systems can have a capacity of 5 million to 40 million characters. Discs used with large-scale computers have capacities of hundreds of millions of characters, and many can be attached to each system.

Appendix 2B: Systems and Support Software

Present Operating and Support Systems

The sophistication of systems and support software generally varies directly with the capabilities of the computer on which it is to be used. Large mainframe computers are supported by comprehensive software packages that provide extensive capabilities to those capable of using them. This is to be expected because the larger computer can be utilized effectively only if most of its operations are controlled automatically. At the other extreme, software for microcomputers is much more rudimentary in its scope of functions. The user of a microcomputer is in direct control of virtually all operations, and the services of a complex operating system would be of only limited benefit. However, operating systems even for the smallest computers are expanding in terms of the capabilities offered.

Twenty years ago, systems software and some support software were furnished free to users by the manufacturers of computer equipment. However, unbundling of software and hardware has been common industry practice for a number of years, and today's user pays for each of the system and software support modules used. Operating system and support software is expensive both in terms of the direct cost and overhead imposed. These software packages can soak up a considerable portion of available computer resources. Thus, a small system with support facilities limited to a single application may, in some cases, be more effective than a large machine burdened with large amounts of overhead. One manufacturer, in fact, had to expand significantly the available memory on one of its larger models to accommodate the burden of operating system and support software.

Data Base Management Software

Data base management systems constitute a specialized software technology of particular importance to providers and users of financial services. This software facilitates the tasks of organizing and accessing large quantities of data where relationships between the various elements comprising a data base are complex and where diverse communities of users access various subsets of the data base. By permitting the sharing of data throughout an organization, the costs of data collection, maintenance, and dissemination are controlled, and all users are able to base their decisions on a common body of information.

Data base technology insulates data bases from the application programs that access them and can significantly improve system integrity and security. Depending on the data base system, users can be limited to accessing only specific data elements, and further, the operations permitted them can be controlled by the data base administrator. Audit trails that record the identity of all who access data and the operations performed can be generated. For example, some users may be permitted only to retrieve data, while others may both retrieve and change a specific set of data elements. Permission to add new elements to a data base can be denied both of these groups and given, instead, to other units within the organization.

On the other hand, data base management systems "put all of the eggs in one basket" in that much of the data critical to an organization is concentrated in only a few data bases. Compromise of a data base management system can lead to significant damage to the organization that is affected. In such an environment, the organization can become vulnerable if management does not fully use those data base management system features which are designed to ensure system security and integrity. Although there is no such thing as perfect security for any system, data base management technology can allow a higher degree of system security and integrity than possible when collections of individual files are used by each application system.

Software Development Tools

The rate of productivity increase for application programmers in the past has been small relative to the rate of increase in the performance-to-cost ratios of computer hardware. However, a new group of tools is becoming available to help alleviate this problem. Data base management technology discussed in the previous section is one such tool. In addition, there are interactive, terminal-oriented systems that support application programmers by minimizing the steps they have to execute to write and test new programs and modify existing ones. Management techniques that emphasize modularity in design and make extensive use of procedures for controlling systems configuration have also proved beneficial.

In addition, advanced languages have made it easier for programmers to develop the required computer codes. Procedure-oriented languages permit the end-user to interact directly with generalized systems and minimize the need for application programmers to develop applications customized to the needs of each user.

Perhaps the major breakthrough has been in programmerless application generators. For example, general-purpose spreadsheets, such as Lotus 1, 2, 3 and VisiOn, allow nonprogrammers to develop complex models and display their results graphically.

The Future for Operating and Support Systems[1]

Support functions such as telecommunication, data management, allocation of hardware resources, and job scheduling will be performed by highly modular support software. More functions now performed by the operating system will be performed in hardware. New emphasis will be placed on the security features and the user will communicate with the operating system through higher level commands.

Users will be able to select capabilities that are tailored to their needs and pay only for those. Generally, ease of use will increase and users will not be required to learn separate ways for dealing with various classes of applications. For example, all terminals will be able to communicate will all applications because the required protocol conversions will be performed automatically. It will be possible for major systems to operate in multiple sites as a single entity because access to and allocation of resources will be controlled by the system and support software. Worldwide distributed networks will be feasible by the mid-1990's. The ability to distribute functions among multiple cooperating processors will serve to increase system reliability and integrity. In addition, the various support packages will develop so that they have great facility to recognize and recover from errors and will be able to notify the appropriate user of transactions that could not be successfully processed because of either a hardware or software error. A key feature of operating system and support software will be its ability to diagnose system problems and dynamically reallocate system components. User installations will have to expend minimal effort to support software packages.

One manufacturer of microcomputers is already marketing an operating system that provides the user with the facility of moving easily from one application to another without the need of explicitly terminating one and initiating a second. As additional applications are added to the repertoire, they can be integrated with operating system so that the user is faced with a single, integrated entity rather than a number of disjoint applications. Integrated, multifunction software packages for microcomputers are well established in the market; and although they do not constitute operating systems, they offer some of the features one would expect to find in an operating system.

This trend toward easing the burden of detail on the end-user of computer systems is expected to be a major theme in the development of system and supporting software into the indefinite future. At some point, the user will no longer have to recognize the existence of a discrete operating system and will be able to focus all attention on the applications that are being used.

Many of the features of the operating systems for large computers are already becoming available for microcomputers. Some of the software development tools that are now available on large computers are being implemented on small ones. One manufacturer has added to its product line a microcomputer that will run a variant of the virtual memory operating system used on its large systems. Networks of small computers will become the functional equivalents of large central systems in many operating environments. The emergence of such capabilities is foreshadowed by some of the office systems that are already being deployed by some manufacturers.

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[1] Most of the concepts relating to the future of system and support software are drawn from, *Future Information Processing Technology, 1983*, prepared jointly for the Institute for Computer Sciences and Technology and the Defense Intelligence Agency.

By the mid-1990's, large computers may function largely as repositories of data and support only the largest processing systems. Small computers directly controlled by end-users will perform most of the processing functions and report generation that will be required. Some installations are already approaching this state.

Tools for system development and maintenance will be of growing importance over the coming decade. As more generalized functions are moved into the hardware, the operating system and support software, the tasks required of applications programmers will be simplified and, hence, less costly to accomplish. A key element in realizing the benefit of this technology will be the ability of management and technicians to understand its capabilities and apply it intelligently in supporting applications systems.

The same system development and maintenance tools that will benefit professional technicians will also help end-users interact directly with computer and communication systems without the need for intermediation by members of technical staffs. The support functions will complement the generalized, user-oriented application systems that will be available; and, together, they will provide the end-user with a powerful package of tools for applying the technologies that will be at his disposal.

Chapter 3

The Securities Industry

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Chapter 3

The Securities Industry

The securities industry in the United States, which developed to help young American business gain financing from European investors, continues to bring together those who need capital and those wishing to invest. The industry directs its concentrated expertise on financial markets toward its intermediary role of facilitating the development of capital. It provides advice, accepts risk, and offers marketing services to ensure that an orderly market for the issuing and trading of securities* is maintained.

Since the introduction of the telegraph 140 years ago, communications technologies have been used by the industry to convey information on which the operations of securities industry depend. However, while the securities industry has always applied state-of-the-art technology to its operations, the level of technology used today and likely to be available tomorrow is beyond what could have been dreamed of when the telegraph was applied in 1844.

In this chapter, the structure, functions, and instruments of the securities industry are described. The impact that the application of computer and communications technologies has had in these areas is reviewed and possible future effects are discussed.

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*For purposes of this study, securities include debt and equity issues used to develop capital (stocks and bonds, money-market securities, and instruments which have been developed to allow hedging and speculation in securities and commmodity markets—i.e., options and futures contracts). These instruments, as well as investment tools which developed from the packaging of securities instruments, such as mutual funds and central asset accounts, are described in app. 3A.

Structure of the Securities Industry

The structure of the securities industry has been shaped by the demands of users, national policy objectives regarding the financial service industry, practical operational concerns, and competitive market forces. In this section, a brief overview of the development of the current structure of the securities industry and a description of the organizations and competitive forces comprising the industry will be provided. Present and future effects of information technology on the structure of the industry will be discussed.

The Development of the Securities Industry in the United States

The securities industry in the United States developed to meet the capital demands of the new Nation. One side effect of the independence won in the Revolutionary War was war debt. This was funded by the issuance of interest-paying bonds, for which a secondary market shortly developed.[1] At the same time the need to finance development in the new Nation was recognized. The burgeoning securities industry provided a vital link to European capital markets and also a means of transferring capital within the United States. The basic role filled by the securities industry in the late 1700's is still a driving force behind its operations today: to provide a means of interaction for those seeking capital and those wishing to invest.

Two factors which quickly emerged as essential to the operation of the securities industry were the maintenance of an orderly market and the availability of trading information. Twenty-four brokers, conducting trading under a buttonwood tree, subscribed to a brokers' agreement that formed the first stock market in New York on May 17, 1792.[2] This market became the New York Stock Exchange. In what is now known as the "Buttonwood Agreement," the brokers focused on working together to assure they would be able to trade securities smoothly and fairly.

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[1] *Marketplace—A Brief History of the New York Stock Exchange* (New York: New York Stock Exchange, Inc., 1982).

Information on trading and prices has always been essential to trading decisions. Securities firms and exchanges clustered (as on Wall Street) to facilitate the communications needed for the operation of the market. A newspaper first published stock prices in 1815. Prior to the introduction of the industry's first technology-based information system, the electric stock ticker (in 1867), messengers literally ran from the trading floor to brokers' offices with information.

Early refinement and expansion of securities trading can be related to three communications technologies: the telegraph, the transatlantic cable, and the telephone.[3] These technologies improved information flows on which the markets are dependent. The telegraph linked exchanges, brokers, and investors throughout the country and made decision-making on investments by someone not on Wall Street practical for the first time. This technology offered the first hope of a national, noncentralized market. The transatlantic cable, completed in 1866, made an international market feasible at a time when American industry was still very much dependent on financing from European investors. Telephones were first used to convey orders from brokers to the floor of the New York Stock Exchange in 1878, 2 years after the first successful test of that technology.

The adoption of these communications technologies and the stock ticker were based on the recognition that the faster and more accurately information flows, the better securities markets function. The introduction of new technologies today is largely based on this assumption.

Organizations Composing the Securities Industry

Three types of organizations traditionally compose the securities industry: investment banks perform the services surrounding a public offering of the stocks and bonds of a corporation; brokers manage the buying and selling of securities; and exchanges provide a vehicle for setting prices and actually conducting transactions.

Investment Banks

The activities of investment banks are centered on the development of capital. The Banking Act of 1933, commonly called "Glass-Steagall," required that investment banking be separated from commercial banking because of the sometimes incongruent objectives and the different levels of risk associated with these kinds of organizations. Investment banks fall into two categories: originating firms and distribution firms. Originating firms developed largely as intermediaries between European financiers and young American industry, and they remain major players in the development of securities offerings. Distribution firms come together in syndication, under the guidance of an originating firm, to guarantee and sell the securities of an issuer.[4]

The four leading investment banks in both domestic and foreign financing are Salomon Brothers, Inc.; Morgan Stanley Inc.; First Boston Inc.; and Goldman Sachs & Co. Merrill Lynch, Pierce, Fenner, & Smith Inc. (Merrill Lynch) and Paine, Webber, Jackson, & Curtis (Paine Webber) have a significant share of the domestic market. Three levels of purchasers and sellers are reached through investment bank activities: first, the issuers of securities, those corporations and governments that purchase investment bank services; second, the investors in new issues; and third, the intermediaries who bring these two parties together—other investment bankers, distributing underwriters, and commercial banks. Investment banks assume the risk of a public offering of investments by guaranteeing their purchase—i.e., underwriting them.

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[2] *New York Stock Exchange 1983 Fact Book* (New York: New York Stock Exchange, June 1983), p. 66.

[3] *Marketplace—A Brief History of the New York Stock Exchange*, op. cit.

[4] Samuel L. Hayes III, "The Transformation of Investment Banking," *Harvard Business Review*, January-February 1979, pp. 153-170.

The nature of competition within investment banking is changing. Price competition is cutting fees for underwriting to new lows. In addition, simplification of securities registration requirements could make underwriters unnecessary. Nevertheless, the need to transfer risk continues to provide a strong incentive for utilizing the services of investment banks.

Brokerage Houses

Full-service brokerage houses perform trades in securities and commodities and provide financial counseling services supported by indepth research and analysis of markets and industries. This segment of the industry is dominated by firms which are subsidiaries of companies that offer a range of financial management services. Six national brokerage houses lead the industry. They are: Merrill Lynch; E. F. Hutton & Co.; Shearson/American Express; Prudential Bache; Dean Witter Reynolds; and Paine Webber. There are also many regional firms, such as Alex Brown & Sons, which play major roles in trading either nationwide or regionally.

This portion of the industry has been affected by the abolition of fixed commission rates in 1975. While brokerage houses in the past competed on the reputation of their research and the quality of their service, price competition has also become a factor. Discounters, who concentrate on the transaction side of the business, have entered the market and have attracted a significant portion of both institutional and individual trading. In response to this market entrance, many full-service brokerage houses are taking steps to distinguish their services and to increase client loyalty. Increased efforts are being directed toward product development and promotion.

Exchanges

The fundamental role of all exchanges in the securities industry is to provide an orderly marketplace for trading. Exchanges provide a central location and a structure in which buyers and sellers can conduct trades. Exchanges are operated on a membership basis. "Seats," memberships that carry the right to trade on an exchange, are purchased by firms or individuals desiring access to its market. Members agree to direct all trades on listed securities through the exchange floor. This allows the exchanges to manage the markets better—for example, to halt trading on a security, if necessary, with the assurance that member firms will not trade off-market. Stocks and bonds, options, and futures contracts are usually traded on separate exchanges. This specialization is a carry-over from the separate formation of capital and commodity markets.

Stock Exchanges.—Stock exchanges are independent players in the securities industry and have two functions: performing transactions and accepting risk. Stock exchanges act as a secondary securities market for both debt and equity issues, providing flexibility and choice for investors. Potential investors in new issues can evaluate the desirability of the instrument in light of their ability to sell it, and therefore may recognize a lower opportunity cost. The existence of secondary markets also increases the available investment choices since securities other than new issues are made available.

There are seven major stock exchanges: New York, American, Boston, Cincinnati, Midwest, Pacific, and Philadelphia. In 1982, 80.8 percent of the total share volume of registered exchanges was traded on the New York Stock Exchange (NYSE). The National Association of Securities Dealers, Inc. (NASD) operates a quotation system and clearing facility for the over-the-counter market. The automated quotation system, NASDAQ,[5] has been responsi-

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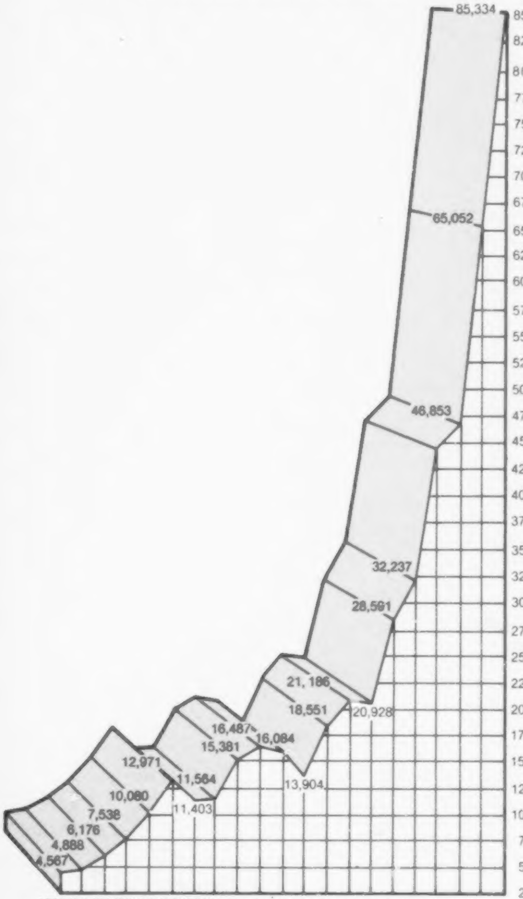
[5] National Association of Securities Dealers Automatic Quotation System.

Figure 3.—Average Daily Share Volume New York Stock Exchange 1963 to 1983



SOURCE: Futures Industry Association, Inc.

Photo credit: New York Stock Exchange

The trading floor of the New York Stock Exchange: 1984

ble for a dramatic increase in trading volume in over-the-counter stocks, an indication of the importance of information flows to trading.

Options Exchanges.—The goal of options exchanges is to provide a continuously competitive and orderly market environment for the purchase and sale of options.[6] Each exchange determines standards regarding which options may be traded on that exchange. They select the underlying securities on which options may be traded based on factors such as the number of shares held by the public and trading volume.

The principal established marketplaces for the trading of options are: the American Stock Exchange; the Chicago Board Options Exchange; the Pacific Stock Exchange; and the Philadelphia Stock Exchange. These exchanges compose the *Options Price Reporting Authority* (OPRA). Trading information from all of the options exchanges is coordinated in OPRA's automated last-sale reporting system. This system, developed and operated by the Securities Industry Automation Corp., provides a consolidated tape of last sale and quote information. The exchanges also formed the *Options Clearing Corp.* (OCC), which ac-

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[6] American Stock Exchange, Inc., et al., *Understanding the Risks and Uses of Listed Options*, 1982.

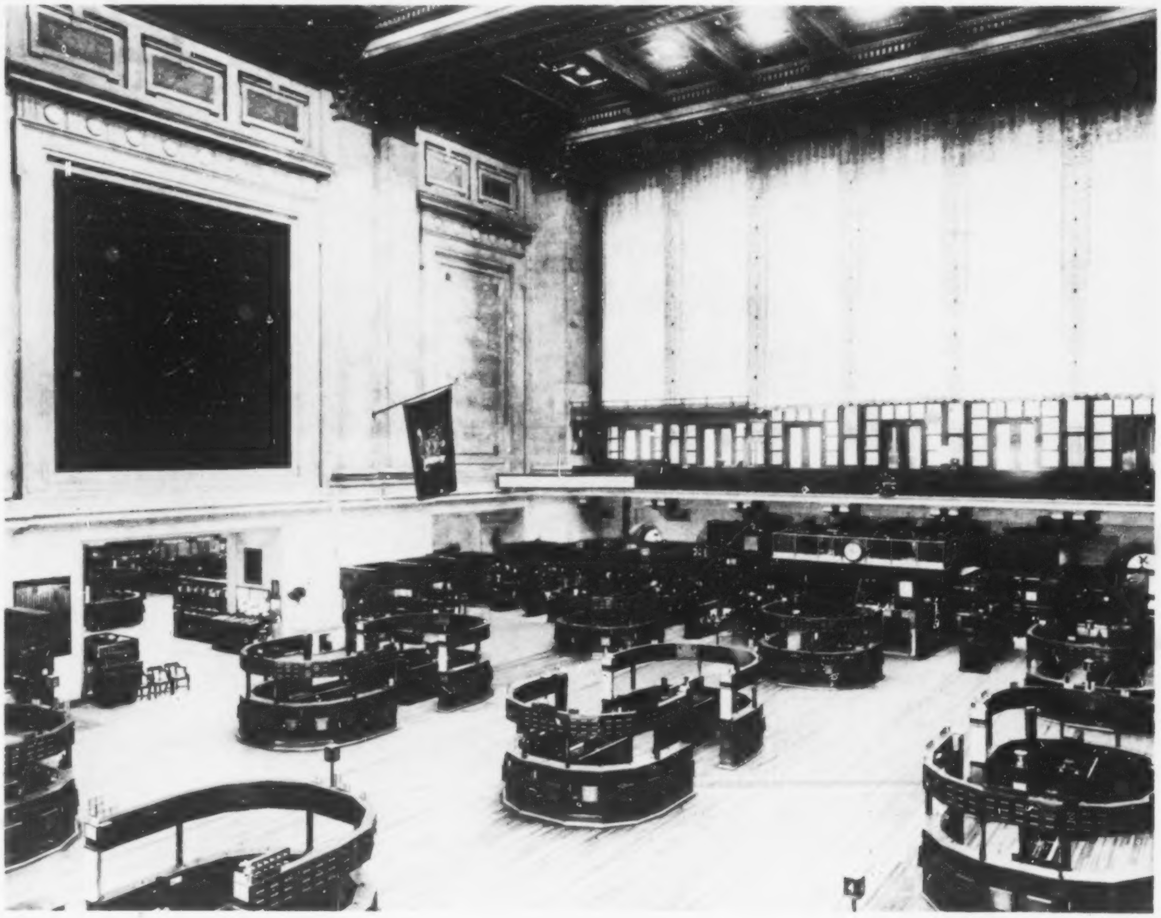

Photo credit: New York Stock Exchange

The trading floor of the New York Stock Exchange: 1930

tually issues the exchange-traded options and assigns exercises.

Options exchanges aid in industry self-regulation by developing and enforcing rules concerning the handling of accounts by brokers, trading hours, and position and exercise limits. Options exchanges and the OCC are regulated by the Securities and Exchange Commission (SEC).

Futures Exchanges.—The principal responsibility of a commodity futures exchange is to ensure the existence of competitive markets free of price manipulation for the trading of futures contracts.[7] Futures trading is conducted in price auctions on the trading floor. The exchanges are operated on a membership basis, and exchange regulations and policies are set by their boards of directors and subject to approval of the Commodity Futures Trading Commission (CFTC). There are many futures exchanges in the United States. The largest is the Chicago Board of Trade, which in 1983 handled 44.89 percent of total trading volume (see table 2.)

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[7] Futures Industry Associates, Inc., "Roles Played by Each Participant," *Futures Trading Course and Handbook*, Washington, D.C., 1983, p. II-4.

Photo credit: Chicago Board of Trade

Trading floor of the Chicago Board of Trade

Table 2.—Contracts Traded—Futures Exchanges: A Comparison of 1983 and 1982

	1983		1982		
Exchange	Contracts	Percent	Contracts	Percent	Rank
1. Chicago Board of Trade	62,811,523	44.89	48,206,790	42.89	(1)
2. Chicago Mercantile Exchange	37,830,044	27.04	33,574,286	29.87	(2)
3. Commodity Exchange, Inc.	20,014,597	14.30	17,520,712	15.59	(3)
4. Coffee, Sugar & Cocoa Exchange	4,876,069	3.48	3,252,512	2.89	(4)
5. New York Mercantile Exchange	3,926,589	2.81	2,649,941	2.36	(5)
6. New York Futures Exchange	3,510,285	2.51	1,451,442	1.29	(9)
7. MidAmerica Commodity Exchange	3,166,537	2.26	2,397,721	2.13	(6)
8. New York Cotton Exchange	1,703,105	1.22	1,479,781	1.32	(8)
9. Kansas City Board of Trade	1,693,042	1.21	1,493,558	1.33	(7)
10. Minneapolis Grain Exchange	379,607	0.27	346,264	0.31	(10)
11. New Orleans Commodity Exchange	13,542	0.01	27,872	0.02	(11)
	139,924,940	100.00	112,400,879	100.00	

SOURCE: Futures Industry Association.

The exchanges play a major role in self-regulation of the futures industry. In this role they are required to perform four activities: surveillance of market activity to detect and prevent situations conducive to price distortion; surveillance of trading practices to detect and prevent trading abuses; investigation of rule violations and customer complaints; and examination of members' books and records.[8] The introduction of new investment products, such as stock futures, indicates that activity on futures exchanges may be expected to grow over the next several years. The regulatory and operational role of the exchanges will become more complex. Information technology is being applied to facilitate the operations of the exchanges and will play an increasingly important role in their activities.

Industry Users

The demands and characteristics of users of the industry are major determinants of industry structure. The organizations of the securities industry serve as intermediaries between two sets of users: capital seekers and investors.

Organizations Seeking Capital

While the focus of much of the activity of securities industry is on secondary markets, the underlying demand for capital is the reason the industry exists. In 1982, the value of new issues of common stock publicly offered was $23.4 billion; new, publicly offered debt obligations totaled $45.2 billion. Private placements of debt and equity totaled $22.3 billion. As the U.S. economy completes its evolution to an information economy, it may be expected that a great number of both new firms and existing corporations with growing operations will be seeking capital through both private and public sources.

Corporations will demand more rapid access to their capital than ever before because of the effect of information technology on the overall economy. Business decisions are being made more quickly, and delays in financing will not be tolerated.

Institutional Investors

Institutional investors include special-interest funds and companies such as pension funds, mutual funds, insurance companies, and private foundations that have a goal of producing income for a specific organizational use and deal in large blocks of securities. They demand prompt, efficient transactions and extensive information.

Since the passage of the Employee Retirement Income Security Act (ERISA), the impact of these investors on the total market has increased substantially. Trades in 10,000-share blocks, a measure of institutional involvement, have increased to over 44 percent of total share volume.[9] The broker must also be willing to assume risk by buying from the institutional investor because he demands a high level of liquidity. At the same time, the importance of this segment of the market has led to price competition following the deregulation of commission rates in 1975.

The demands of institutional investors have been, in large part, responsible for much of the automation of trading and clearing by the securities industry. Exchanges need to attract institutional capital to maintain the marketplace, yet information technology, combined with institutional traders' level of market expertise, makes off-market trading a viable alternative for these traders. The volume of trading conducted by institutional investors makes those investors valuable clients for both brokers and exchanges.

Pension funds are the most significant institutional investors in capital markets. In 1980, these funds held 13.4 percent of the total market value of NYSE listed stocks.[10] Two factors that have contributed to the growing importance of pension funds, both as savings vehicles and institutional investors, are the aging

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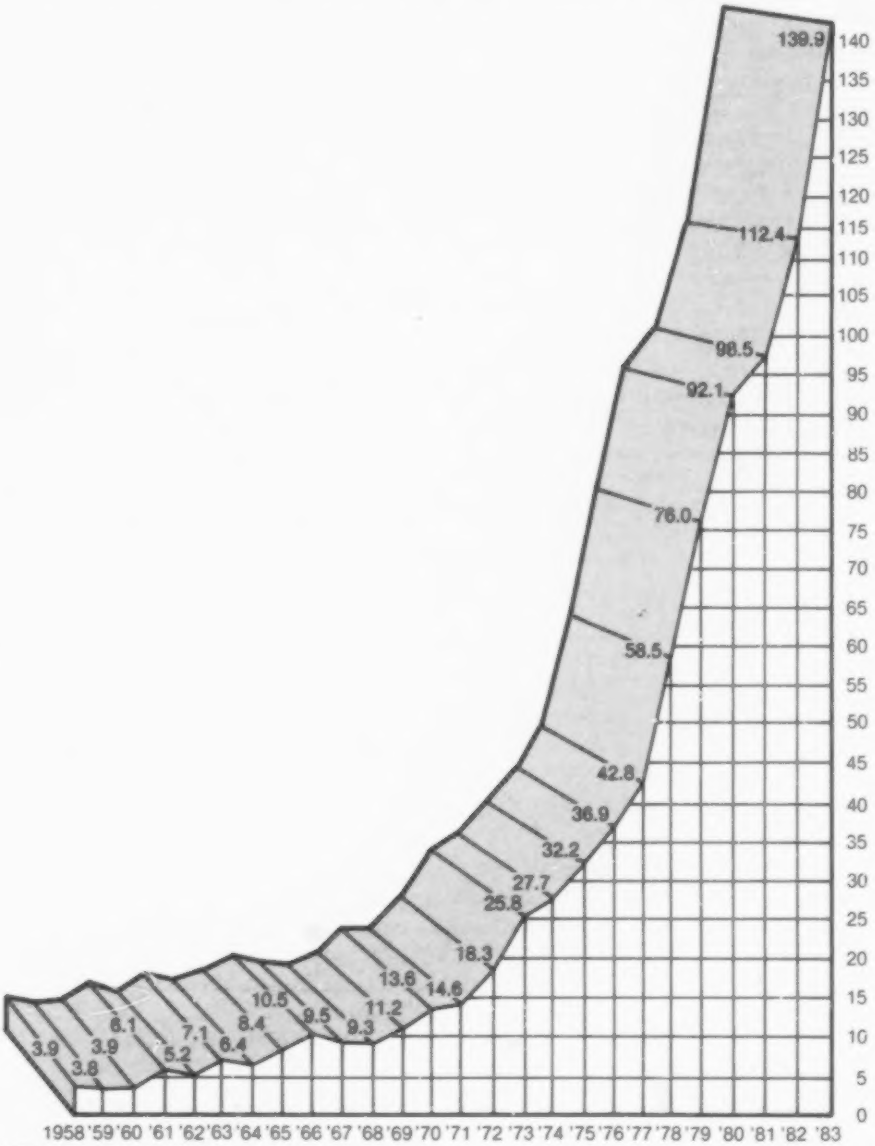
[8] U.S. General Accounting Office, *Survey of Investor Protection and the Regulation of Financial Intermediaries*, 1983, pp. 28-29.

[9] Securities Industry Association data.

[10] *New York Stock Exchange 1983 Fact Book*, op. cit., p. 52.

Figure 4.—Volume of Futures Trading, 1958-83 (millions of contracts traded)



SOURCE: New York Stock Exchange data.

of the population and ERISA. Since there has been great interest in individual retirement planning, pension funds may be expected to be a major player in securities markets.

A **mutual fund** is a company whose principal line of commerce is investment in securities for the benefit of shareholders. Shares are sold to investors for the net asset value plus any applicable sales charges. The return for the investor in a mutual fund is similar to that for any corporate shareholder: the investor profits from the assumed expertise of the company management in investment decisions. Mutual funds are significant as institutional investors because they usually trade in large volumes.

Funds are classified by investment strategy and fall into three categories: income funds, which strive to provide a current income for investors; growth funds, which focus on long-term appreciation; and income and growth funds, which try to be all things to all people. Generally, funds that seek a higher return for investors are more risky. For example, some funds, such as the Phoenix Fund of Merrill Lynch, are composed of securities of failing companies that are believed to have the potential to rebound. While the risk level is higher than average, shareholders in this type of fund have less exposure to risk than if they were to invest in individual securities, and they benefit from high yield.

Mutual funds frequently specialize in specific types of securities, such as government bonds, or in securities from a particular type of industry. *Money market mutual funds* invest only in money market securities, which are by definition short term. For this reason, money market mutual funds are considered less risky and are more liquid than the traditional mutual funds. Money market funds have three basic objectives: to preserve shareholder capital; to maintain liquidity; and, in light of these two objectives, to achieve the highest possible current income.[11] Money market instruments are generally written in high denominations and are only accessible to many investors because they are able to pool their investment dollars in the funds. The money market benefits from the funds because a large quantity of capital not otherwise available is attracted.

Individual Investors

The typical individual investor in securities is an affluent consumer who demands information and advice geared toward his requirements. The sales of mutual funds, a proxy indicator of the level of individual involvement in the securities market, are rebounding after a period of decline. This upswing, plus recognized opportunity to market new investment products, has generated renewed interest in individual investors by the securities industry.

There has been tremendous growth in the number of stockholders. NYSE reports that 42.36 million Americans own shares of U.S. corporations or stock mutual funds, an increase of 10.1 million since 1981.[12] Of particular significance to the securities industry is the tremendous growth in the number of first-time investors, 7.3 million since 1981. This growth may be attributable to several factors, including the strength of the stock market during the early 1980's, corporate employee stock purchase plans, and most notably, changing demographics.

The "aging" baby-boom generation, now approaching peak investment years, may cause an increase in the number of people investing. People are waiting longer to get married for the first time and have families and therefore are likely to be able to invest at a younger age. While securities firms once targeted their services towards a small portion of the population, their market has become more diverse in terms of both age and income.

Securities firms have been expanding their product lines and the scope of financial services they provide to meet the demands of the individual investor. Movement by firms into other areas, such as insurance and real estate, is an attempt to draw clients at an earlier stage in their financial lifecycle and to fill all of their financial needs.

The Regulatory Structure of the Securities Industry

Federal regulations enacted in the 1930's disallowed involvement by depository institutions in securities activities because of concerns about the effects of risk associated with these transactions on the stability and soundness of banks. Such restrictions separated capital creation from the banking activities of corporations, such as the extension of operating credit and transaction accounts. These restrictions were intended to assure that depository institutions acted in the best interests of depositors.

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[11] U.S. General Accounting Office, op. cit., p. 60.

[12] Jon Friedman and Tom Petruno, "Record 42M of Us Are Wall Street Investors," *USA Today*, Dec. 1, 1983, sec. A, p. 1.

The regulatory structure of the securities industry recognizes that capital and money markets are essential to the health of all sectors of the national economy. Legislation concerning the securities industry has focused on three areas: providing for disclosure to investors, promoting self-regulation by the industry, and facilitating the development of a national market for securities. Federal regulation that is focused directly on the commodities futures segment of the industry is similarly designed and seeks to protect markets and individual traders.

Securities and commodities trading is overseen by a two-tier regulatory system: Federal and State government and industry. Federal regulation is focused on the oversight of markets and investor protection. State regulation of securities, commonly called "blue sky laws," since they were designed to prevent the sale of securities with the investment potential of the blue sky, preceded Federal regulation, and the right of States to regulate was preserved when the first major legislation concerning the operation of the securities industry, the Securities Act of 1933, was passed.

While Federal regulation focuses on disclosure without value judgment on the worth of the securities, State laws may actually involve licensing. Registration of an issue may be refused by a State authority, which would prohibit sale in that State.[13] State laws differ, but efforts to develop uniform laws are being led by the North American Securities Administrators Association.

Self-regulation is imposed and enforced by the exchanges and by industry associations. While the industry began formally supervising its own operations with the development of the Buttonwood Agreement, the self-regulatory system was first recognized by Congress and subject to Federal Government supervision with the passage of the Securities Exchange Act of 1934.

Federal Regulatory Agencies

Several Federal agencies play roles in the activities of the securities industry. The Small Business Administration licenses and regulates Small Business Investment Corporations, a type of venture capital firm. The Board of Governors of the Federal Reserve regulates the extension of credit by brokers, as mandated in the Securities Exchange Act of 1934, and has a major impact on the industry by regulating the activities of banks. However, responsibility for regulating the securities industry is held by SEC, and responsibility for the futures industry, by CFTC.

SEC was established by the Securities Exchange Act of 1934. Its regulatory activities are based on the belief that disclosure is the preferable means of assuring the smooth operation of securities markets; it is not invasive to the operations of industry players, and it retains investor choice. SEC also acts to prevent price manipulation of securities and regulates the the practices of exchanges, brokers, and dealers. It acts in conjunction with the industry self-regulatory agencies and oversees their activities.

While not a regulatory agency, the Securities Investor Protection Corp. (SIPC), a quasi-governmental organization, has brought a uniform investor protection policy to the securities industry. SIPC operates as a private nonprofit membership corporation whose primary function is to provide financial protection for the clients of failed securities firms. The corporation was mandated by the Securities Investor Protection Act of 1970 in response to problems that occurred in the late 1960's throughout the brokerage industry as stock prices fluctuated widely and volume on the exchanges increased dramatically.

The only function of SIPC is to insure accounts. It covers shortages in accounts of up to $500,000, including coverage for as much as $100,000 in cash, for each account. Since it began operation in December 1970, it has paid out more than $133 million in claims.[14] SIPC assesses an annual fee on each of the 7,000 brokerage houses in the United States, which are required to be members of the corporation, to maintain the $150 million level it is required by law to keep available to satisfy claims. At times, SIPC has acted as trustee in cases of brokerage house liquidations and as such has distributed payments to customers as accounts were settled.

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[13] U.S. General Accounting Office, op. cit., p. 22.

The corporation relies on SEC and the securities industry's self-regulating organizations for notification that a member firm is in danger of collapse. If SIPC determines that the customers of the brokerage house are in need of its protection, it begins what is termed a "customer protection proceeding," which is a liquidation procedure. SEC is the only organization that can sue SIPC to force it to begin liquidation proceedings.

CFTC is responsible for regulating commodity futures trading on organized exchanges. It acts to prevent price manipulation, attempts to corner market dissemination of false or misleading information, and mishandling of traders' margin money and equity.[15] It reviews and approves the instruments traded on the futures exchanges—i.e., futures contracts. CFTC oversees the activities of exchanges and other self-regulatory associations.

Disclosure for the futures industry involves not only the characteristics of specific contracts, but also the level of risk involved in this type of investment. All potential investors in futures markets are informed that they may experience large losses as well as gains and that it may be difficult to liquidate a position.

Industry Self-Regulatory Agencies

Industry associations and exchanges establish and enforce rules concerning the operations of the securities industry, rules that are often more stringent than Federal regulations. An implicit objective of self-regulatory agencies is to maintain the autonomy of the industry. To meet this goal, these organizations try to ensure that the behavior of the industry is above reproach. They play a major role in overseeing the markets, market systems, and the individuals active in the industry. Self-regulatory agencies also have an educational role in dealing with both members of the industry and the public.

The two most significant securities industry self-regulatory organizations are NASD and NYSE. Their roles may be expected to grow as they continue to carry a great portion of all securities trading. The National Futures Association (NFA) is the self-regulatory organization of the futures industry.

NASD is a self-regulatory agency responsible for regulating the over-the-counter securities market and for promoting high standards of operation throughout the industry. It also establishes standards of professional competence. NASD was empowered through the Maloney Act of 1938 amendments to the Securities Exchange Act of 1934. Its central purpose—to promote high standards of commercial honor and just and equitable principles of trade throughout the industry—has become even more important to the industry as technology is applied.

NYSE oversees the operation of the exchange marketplace and administers rules and regulations related to the maintenance of orderly markets and the standards of professional competence.[16] NYSE is also a major source of information concerning the industry as a whole.

In 1981 NFA was designated a "registered futures association" by CFTC, which oversees its activities, with congressional endorsement. It began operating on October 1, 1982. NFA was formed in recognition of the continuing growth of futures trading to bring a uniform system of self-regulation to its activities.

NFA works toward four fundamental purposes: strengthening industry self-regulation by regulating those segments of the futures industry that were previously outside the scope of self-regulatory organizations; eliminating duplication in self-regulation, thereby controlling expenses; eliminating overlap and conflicts in self-regulation of the industry by providing uniform standards; and aiding effective regulation by removing unnecessary regulatory constraints.[17]

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[14] Christine Davies, "Brokerage Failures Bring Agency to Life," *USA Today*, Mar. 9, 1983.

[15] U.S. General Accounting Office, op. cit., p. 26.

[16] U.S. General Accounting Office, op. cit., p. 24.

Trends in Industry Regulation

Trading volume and the number of types of securities instruments have been increasing. The securities industry is being entered by players from other sectors of the financial services industry and by outside industries. It is likely that more demands will be placed on the oversight functions of the regulatory system. However, while the importance of this role is increasing, technology will facilitate this function by improving information flows on the operations of the industry.

While the oversight role may be streamlined, standards and education will require more attention. Changes in industry functions and the introduction of new products (facilitated by the application of information technology) will require an expansion of the educational role of the regulatory agencies. The continuing development of technology-based systems necessitates coordination of standards to ensure that different markets, both domestically and internationally, can interact.

Characteristics of the Securities Industry

Concentration

The securities industry is heavily concentrated. In 1982, the 25 largest firms, out of nearly 550 Securities Industry Association member firms, controlled nearly 75 percent of the total capital of the industry. The 10 largest investment banks controlled two-thirds of the profits for that segment. This high level of concentration results, in part, from the large number of mergers, reorganizations, and liquidations that occurred during the 1970's. The consolidation activity was spawned by rising business costs for the industry and the weight of transaction processing, as the volume of trade had increased throughout the 1960's.

Throughout the 1970's several vertical mergers between brokers and investment banks occurred—most notably the acquisition of Reynolds Securities by broker Dean Witter & Co. and the purchase of White Weld by Merrill Lynch. These mergers integrated new issue management with the distribution of securities and may be considered an early move toward consolidation throughout the financial services industry.

Recent acquisitions and mergers seen in the securities industry have frequently involved players from other financial services industries. The product lines of firms are becoming both horizontally and vertically integrated with lines previously only offered outside of the securities industry.

Movement Toward a National Securities Market

The Securities Acts Amendments of 1975 directed SEC and the securities industry to create a national market system for both transacting and clearance. Movement in this direction is having a profound effect on the structure of the securities industry. Exchanges have been linked to a degree not previously seen, through development of technology-based information systems such as the Intermarket Trading System. Clearing systems involving the National Securities Clearing Corp. have made same-day settlement a possibility.

The driving force in developing systems that make a national market possible is the Securities Industry Automation Corp. (SIAC). The great increase in the volume of trading on the major exchanges in the late 1960's made it evident that the securities market needs the capability to deal with extensive volume. SIAC was organized both to operate and to develop more efficient and effective ways of dealing with the transaction process. SIAC systems support order processing, trading, and reporting functions, as well as clearance and settlement for stocks, bonds, options, and financial futures. The corporation is owned by the New York and American Stock Exchanges.

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[17] National Futures Association, *A Partnership Between the Public and the Industry*, Chicago, 1983, p. 11.

One of the major impacts of SIAC on the securities industry is that it makes the development and refinement of technological systems a continual process. This should prevent or at least limit the lag between the identification of a need that could be best addressed with a technology-based system and the application of a solution.

New Entrants to the Securities Industry

Entrance by Depository Institutions

An amendment, effective September 9, 1983, to Regulation Y of the Federal Reserve Board has added securities brokerage and related margin lending to the list of activities permissible for bank holding companies. This action, which extends from previous approval by the Government for the acquisition of retail discount brokers by bank holding companies (notably the BankAmerica Corp. acquisition of Charles Schwab), may increase the interest among bank holding companies in entering the securities industry.[18]

The motivation of banks for providing discount brokerage services may be seen as either a reaction to market conditions or an attempt to protect market shares. Since many brokerage houses are offering investment opportunities that serve functions similiar to depository accounts, often with more flexibility and higher rates of return, the consumer's perceived need for a bank may be decreased. One motivation for providing brokerage services may be to prevent the potential luring away of other portions of a depositor's business.

While acquisition of a discount broker provides one method of expansion into securities for depository institutions, economies in operations made possible by the application information technology have made other means of market entrance possible. Twenty-five savings and loan associations and savings banks own ISFA Holding Co., Ltd., which operates INVEST, a brokerage service, through a wholly owned subsidiary. Thrift institutions, which would not be able to enter the brokerage business independently, can offer transaction and advice investment services to their customers by subscribing to INVEST.

Special INVEST centers are placed in branches where they are accessible and evident to customers, yet remain separate and distinct, by order of SEC and the Federal Home Loan Bank Board, from the other operations of the thrift. Just as the securities industry is developing and offering new products to retain clients, this is also a basic motivation behind INVEST. Thrifts are thus able to expand the services they can offer their customers.

Trades conducted through new alternative brokerage services are executed through the exchanges, usually by way of a clearing broker. The securities industry finds itself in the position of servicing competitors, a situation that is quite common throughout the financial service industry. As capabilities and economies found in information technology continue to grow, more entrants may be expected and the wholesale portion of the securities industry will probably grow.

Possible Entrants to the Securities Industry

Players throughout the financial service industry, including the securities industry, have been expanding their product lines to fill as many of their clients' needs as possible. Recognized economies of scope usually underlie this expansion of distribution systems, both for information and for community presence, and in terms of complementing current product lines. Providers often feel they can retain their customer base by entering other lines of financial services.

The entrance of other financial service players into the securities industry is already occurring. Several insurance companies have purchased regional brokers, and some depositories have acquired discount brokers. Shearson/American Express and Prudential Bache are both results of mergers between players in different sections of the financial services industry. Consolidation within the financial service industry is likely to continue.

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[18] Federal Reserve Press Release, Aug. 11, 1983.

Others, not traditionally thought of as providers of financial services, have also entered the securities industry. The most widely cited example is Sears' entrance through the acquisition of Dean Witter.

Other players who may recognize significant economies of scope in entering the securities industry are firms in the communications and computer industries. These firms might be in an especially strong position to enter the wholesale side for the securities industry. Barriers to entry, such as exchange membership, may be overcome by technology. Computer and communications technologies allow for the creation of information and transacting systems not dependent on the current industry structure.

The Securities Industry and the International Market

The securities industry has its roots in the need for the American economy to interact in the international capital markets. However, prior to the completion of the transatlantic cable in 1866, a real international market could not exist because it was impossible to convey information in any meaningful time frame. Information technology has made it possible for the American securities industry to interact in the international market, while economic forces have made it essential.

Information technology has allowed a global capital market to develop, resulting in increased opportunities both for investors and capital seekers. Foreign individuals and institutions made purchases and sales of $79.8 billion of domestic corporate stock in 1982, and transactions in all securities resulted in a net inflow of $14.3 billion in capital to the United States.[19]

Communications technologies are so advanced that a market anywhere in the world can be selected for trading. This could have significant impacts on the stability of the economies of nations. For example, the halting of trading on an exchange in one country could simply result in new trade in another nation. It is not clear what impact large differences in the valuation of a security by different countries could have on capital markets. International issues in the development of capital markets are being considered by various organizations. One such organization is the Fédération Internationale des Bourses de Valeurs, an association of 30 stock exchanges in 20 countries.

The Effects of Information Technology on the Structure of the Securities Industry

The application of information technology in the securities industry affects its structure by facilitating the flow of information to such an extent that it removes geographic constraints on market participants and allows for development of international capital markets. It may also place additional barriers to entry to the securities industry. Without adequate access to telecommunication services, for example, a securities firm cannot function.

The Functions of the Securities Industry

The most significant role of the securities industry is in the development of capital. The institutions and players of the securities industry facilitate the development of capital structures of organizations and corporations. While it would be possible for organizations in search of financing and potential investors to interact directly, the market structure that has developed provides needed services more efficiently. Since most corporations and organizations do not approach capital markets frequently, financing with the aid of the securities industry is usually more cost effective than direct attempts because of the expertise securities institutions have in analyzing securities markets and in locating potential investors, and because of the ability of the securities industry to accept risk.

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[19] *New York Stock Exchange 1983 Fact Book*, op. cit., p. 63.

The use of information and communication technologies by the industry is nearly universal, and adjustments may be expected in operations as the value of technology is realized. However, while information technology may change the way in which the securities industry performs its activities, and may even facilitate attempts by investors to act on their own behalf, it is expected that the basic functions of the securities industry will remain an essential part of the development of capital. In this section, an overview of the functions of the industry and the emerging effect of the application of information technology on these roles will be described. The significance of the advisory, risk-accepting, and marketing functions of the securities industry to the process of gathering capital will be outlined, and the effect of information technology on this process will be summarized. Specific approaches to capital formation are discussed in appendix 3B.

The Securities Industry as an Advisor

In its advisory role, the securities industry provides information and offers guidance to its clients. It is able to advise organizations seeking capital on the type of financing most desirable, whether through private or public means, and, perhaps most significantly, what the timing for entering the capital market should be. These decisions are based on the objectives of the firm. Factors to be considered include the risk and return associated with various issuing organizations and instruments. Timing of buy and sell decisions is also part of this advice function.

Information Dissemination

Information technology affects information dissemination by the securities industry in several ways. Information is now less costly to gather, store, and access than it was in largely manual systems. Therefore, not only is it likely that the quantity and quality of available information will increase, but also that more information will be sought. Investors and other parties interacting with the securities industry may be expected to make better and more satisfying decisions because of the increased availability of information.

Technology has already had a major impact on information flows throughout the securities industry, and it appears that the resultant changes may have major impacts on the operation and, in time, the structure of the securities industry. Information technology enhances the reporting of securities trades. The Consolidated Quotation System, which went online in 1978, collects and disseminates quotation information from exchanges across the Nation and calculates and appends the national Best Bid and Offer to the quotation information.[20] Communication technology makes it possible to transmit this information in real time to system subscribers nationwide. A similar system is in place on the NYSE for debt issues. The Automated Bond System provides current quotation and trade information for more than 80 percent of the exchange-listed bonds.[21] This system has improved the quality of information available on bond trading.

Information technology may increase the independent role investors assume as information monitors, particularly the individual investors. Although massive quantities of financial information are currently available through a variety of media, such as newspapers, radio, and television, and through publicly available consolidated tapes, individual investors may expect to have even more information at their disposal. While a "more is better" philosophy is usually applied to information, the result can be confusing, deceptive, and frustrating to users. Moreover, information gathered by intermediaries within the securities industry may require translation to a form that can be used by clients.

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[20] Securities Industry Automation Corp., *Annual Report*, New York, 1982.

[21] New York Stock Exchange, *Annual Report 1982*, New York.

The adoption of home information systems, particularly interactive cable and personal computer systems, may change the way in which this information is gathered and used. E. F. Hutton and Dean Witter provide customers with securities research that can be accessed via home computers.[22] It is not clear how investors will use this information. The continual availability of new information may result in more frequent trading; however, home systems may just be, in the aggregate, a new medium. Investors may evaluate no more information than they did in the past.

Computer and communication technologies have increased the speed with which information is available to the mass market. With the systems now available, investors may become less dependent on a broker or dealer for updated information. An example of this type of system is Pocket Quote, produced by Telemet America, Inc. The basis of Pocket Quote is an 11-ounce programmable receiver, which looks like a calculator and can be used to monitor the New York and American Stock Exchanges as well as option exchanges. Information, including price and trade volume, on up to 20 securities specified by the user is transmitted, subject to a 15-minute delay. The data are broadcast in a scrambled form on FM side bands, using a digital signal. Not only is the information readily available to the investor, but the system can be programed to page the user automatically at any time there is "news" about any investment instrument in which he/she is interested.

The potential for investors to act immediately on information continually updated and transmitted via such systems may affect the stability of securities markets. The ability of the market to correct itself in unusual situations may be destroyed. In the long run, this may be a severe disadvantage for the investor, particularly the small investor, who may find himself bearing both transaction and lost opportunity costs because of action taken because of basically meaningless market fluctuations.

Counseling

The nature of counseling may be changed by the amount and type of information and supporting analytical tools available. Research is expected to become pivotal rather than passive in the investment advisory function.[23] Analysis and recommendations presented by securities industry intermediaries to clients concerning potential investments may be more detailed and, to complement this process, analysis of the financial needs of the individual may also improve.

Increased availability of information technology has changed the nature of counseling by placing more sophisticated analytical tools in the hands of both advisors and investors who may not have had access to these tools in the past. This change may affect the way in which investment decisions are made and the quality of these decisions.[24]

The reliance on information technology for analysis of personal investment needs, objectives, and choices may indicate an initial move in the industry to deemphasize individual human judgment and perhaps a deemphasis of the client/broker relationship. It is not clear what the impact of this change will be; however, a decline in personalized service, based on the evaluation by the broker of the client's financial objectives, may occur.

While counseling may be displaced in some areas within the securities industry, its importance as a separate and unique service of the industry has been highlighted in some cases.

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[22] Tim Carrington, "Stock Trading by Computer Enters Homes," *The Wall Street Journal*, Oct. 6, 1983.

[23] Thomas Moore, "Ball Takes Bache and Runs With It," *Fortune*, Jan. 24, 1983, pp. 97-98.

[24] Lee B. Spencer, "The Electric Library," remarks to the American Bar Association, Federal Regulation of Securities Committee, Nov. 19, 1982.

Advice, particularly counseling, has been unbundled from the total package of services offered in a new service supplied by Merrill Lynch, called "Pathfinder." For a set fee, the client receives what amounts to a financial checkup. The evaluation provides guidance to the investor in a somewhat objective framework. The success of this product may be an indication of the future role of advice within the securities industry.

Acceptance of Risk by the Securities Industry

The securities industry accepts risk that might otherwise be experienced by individuals or organizations seeking investment. It does this in two ways: through underwriting and by the extension of credit through margin. Underwriting refers to the assumption of risk by an investment bank or other third party at the time of a public offering. The extension of credit by brokerage houses is referred to as margin.

Underwriting New Issues

Underwriting involves the purchase of securities from the issuing company and the subsequent resale of the instruments to the public. This service, which is usually performed by investment bankers, is essential to firms in need of capital that are not in the business of marketing securities. It allows them to receive the funds they need while transferring the marketing function to an expert who may be expected to be more effective in reaching prospective investors.

The underwriter accepts some of the risk associated with a public offering. He prevents lag time by assuring that the issuing corporation has access to the funds it is attempting to raise when needed. By buying the public offering from the firm in search of financing, the underwriter makes it easier for the management of the firm to plan the use of the funds generated. The issuing organization may be less concerned about the flow of cash the sale produces because it is usually guaranteed a fixed price and can use those funds when the agreement with the investment bank or other underwriter is closed.

In most cases, the underwriter also assumes risk by assuring that the issue will be sold, and he accepts the risk that market fluctuations or initial pricing mistakes may influence the success of the issue. Offerings underwritten on a "best efforts" basis, where the underwriter does not bear the risk of an unsuccessful offering, permit those issuers in a startup or developmental stage, whose issues may be considered to be more risky, to have access to the public capital markets.

Underwriters earn money by buying securities at a lower price than they resell them for to investors. The difference in price, or spread, is a major consideration in the selection of an investment bank by a firm. A prospective client for an underwriter may choose an investment bank through two methods: competitive bidding or negotiation. Both systems have advantages, and experts disagree on which provides the best price for the capital seeker. The advantage of the negotiated system is that the issuing firm and the underwriter work together to make decisions about the pricing and timing of the issue.

The company using a competitive bidding system invites offers from investment bankers. This process is required for many public utilities and most municipal offerings. But while some experts believe it results in higher net proceeds for the issuing organization (because of the forces of competition), it has disadvantages. Much of the benefit of the advisory function that the issuing company would enjoy in a negotiated situation is lost. A higher price may be received, but this largely depends on the health of the market at the time of the offering. In a depressed market, investment bankers are less likely to compete for a public offering, and therefore the price received may be lower.

It is also typical for investment banks to minimize their risk by forming syndicates. This spreads risk and benefit because of their pooled sales force and allows a number of underwriting firms to participate together in large public offerings. Changes in industry structure, particularly consolidation among investment banks, may affect this operation.

The presence of an underwriter provides a valuable service for the prospective investor. Investment bankers are expected to examine the corporate records with due diligence and are liable to defrauded investors if they fail their due-diligence obligations and miss any misstatement or omission of material fact by the issuer in the prospectus. Therefore, not only does an underwriter assure that the issue will be sold in a "firm commitment" offering, but it also provides an oversight function of the issuer on behalf of prospective investors.

The underwriter also frequently accepts risk through providing a secondary market for securities by maintaining a position in the stock. This activity, called "making a market," is similar to the role played by securities specialists, which is discussed in a later section. The underwriter quotes "bid" and "asked" prices for the security based on market supply and demand and intervenes as a buyer or seller, when necessary. The original offering of a debt or equity issue may be expected to be more successful when the potential investors know that the existence of a secondary market is guaranteed.

Information technology may affect the underwriting function by decreasing the time between the initial development of a securities issue and its sale, lessening the need of capital seekers to be protected against this lag. Pricing decisions and market evaluations may be more certain if the time frame in which the security is offered is lessened.

Price competition has been increasing in the area of underwriting. Since the use of syndicates is decreasing, there is a greater need for individual firms to have substantial capital if they are to continue functioning as underwriters.[25] Information technology may be a contributing factor in the advent of bought deals that involve the purchase of an entire issue, usually by a single underwriter who has not lined up buyers in advance. While information technology may allow underwriters to locate buyers quickly, more risk is involved in this method than with a traditional syndicate.

The emphasis on price competition may be a disadvantage for corporations entering capital markets because the benefits of advice on pricing and timing of an issue is sacrificed. While sophisticated analytical tools, which information technology may enhance, may assist corporations seeking financing in evaluating various possibilities, this type of analysis may not be tailored to the needs and objectives of corporations to the same extent as the information and counseling services provided by an underwriter.

Margin

"Margin" refers to the amount of money paid by an investor to acquire a security through credit instead of cash. At the end of 1982, the securities industry held nearly $13 billion ($12.98 million) in margin debt secured by nearly $39 billion ($38.88 million) worth of collateral.[26]

The Securities Exchange Act of 1934 empowers the Federal Reserve Board to regulate this extension of credit. Brokers are permitted to extend regulated credit on stocks and convertible bonds traded on registered exchanges as well as some select over-the-counter stocks. Initial margin requirements, set by the Federal Reserve Board, currently call for a deposit equal to 50 percent of the total value for both stocks and convertible bonds. Stock exchanges and other self-regulatory agencies of the industry have individual requirements for the opening and maintenance of margin accounts. For example, the NYSE requires an initial deposit of at least $2,000 and the maintenance of equity of the customer at 25 percent of the value of securities carried.

The advent of home equity access accounts, encouraged by advances in information technology, may increase the amount of margin debt and change the nature of collateral. While some accounts restrict this use of credit drawn from home equity for the purchase of securities, in many situations this is acceptable.

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[25] A. F. Ehrbar, "Upheaval in Investment Banking," *Fortune*, Aug. 23, 1982, pp. 90-95.

[26] *New York Stock Exchange 1983 Fact Book*, op. cit., p. 46.

Margin takes on a different meaning in option and futures contract trading. In futures trading, margin refers to the amount of money or collateral which a client is required to deposit with his broker to insure the broker against losses on open futures contracts. Option writers must, similarly, deposit cash or securities with their brokers so that the brokers are covered in case of an assignment.

Margin plays an important role in speculation in securities markets. A frequently used strategy in the buying and selling of securities is the "short" position. In this case, an investor sells securities he does not own, but has borrowed, to make delivery in the hopes that the price will decline before it is necessary for him to return the security. This activity can be extremely risky. However, it accounts for a significant amount of market activity. In 1982, 1.5 billion shares, in round lots, were sold short, an amount that was 9.3 percent of all reported securities sales.[27]

Information technology may decrease the significance of margin as a convenience for brokerage customers because it eases access to assets and facilitates funds transfers. Customers may be able to finance securities purchases using other assets whose liquidity has increased as a result of increased use of information technology. It is not clear what the net effect will be; however, the use of electronic funds transfers may largely eliminate the use of margin by brokerage houses to provide float.

Marketing by the Securities Industry

For purposes of discussing the securities industry, "marketing" is defined as those activities designed to identify and meet the needs of clients; i.e., both seekers of capital and investors. It is assumed that these clients do not demand a specific product or type of service, but rather, that the clients recognize an unfilled need and seek a way to meet it.

At one time the operations of the securities industry were centered on what was possible, given the regulatory framework and its business concerns. Now, a new awareness of the importance of basic marketing to retain and develop business is evident, resulting in research to support activities in product development and promotion and the targeting of specific segments of the population for specialized products. Given the competition the industry faces in its traditional and new product lines, especially from new entrants into the financial service industry, the marketing function may be expected to continue to grow in importance for the foreseeable future.

Information technology may affect those marketing functions of the securities industry that comprise product development, sales or brokerage, and pricing.

Product Development

In recent years, the regulatory restraints on the financial service industry have decreased, and the securities industry has found competitors in what at one time were strictly separate businesses. These developments have occurred when the securities industry was observing a continual demographic and psychographic change among its potential retail clients, a growing institutional market, and more complex financial needs among organizations seeking capital.

Shifts in the area of product development are seen mainly in the way products are packaged, specifically in the variety of mutual funds and money market mutual funds that have been developed. It is not yet clear how patent and copyright laws will affect the development of information technology-based financial services products. If financial service products become patentable, some securities industry experts believe that competition could be stifled.[28] Many financial service products are similar in both character and features, and therefore, there is an inherent possibility of patent infringement. Differentiating products by attribute has not been of great interest to the financial service industry, which has competed by geographic market and comparative return and cost.

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[27] *New York Stock Exchange 1983 Fact Book*, op. cit., p. 48.

[28] "Merrill Lynch Wins Cash Account Row With Dean Witter," *The Wall Street Journal*, Dec. 29, 1983, sec. 1, p. 2.

Information technology has created interest in patenting financial service products because communications and computer technologies have broadened markets. Products that at one time may have been offered locally now compete nationally. Therefore, protection of product may become as necessary as the positioning of the product.

The patentability of financial products is now being tested in cases involving the central-asset account. In response to perceived consumer demand, most major firms in the securities industry, including Dean Witter, Paine Webber, Shearson/American Express, and Prudential Bache, have introduced these accounts, which are combination margin accounts and investment funds. Merrill Lynch led the development of asset management accounts with its introduction of the cash management account in 1977, for which it received patents in August 1982 and March 1983, and, with over 1 million accounts, is the market leader. Following the receipt of its patent, Merrill Lynch notified competitors that it was imposing an annual licensing fee of $10 on all asset management accounts. Initially, this levy was not taken seriously throughout the industry; however, without admitting any patent infringement, Dean Witter resolved its dispute with Merrill Lynch about the accounts in late December 1983 for $1 million. The firms agreed to "grant each other a nonexclusive, royalty-free license to use any improvements or changes either might make relating to central-asset accounts."[29]

If financial service accounts are routinely patented, investors may find that their choices are limited, since the patent may be a barrier to entry into some product lines for some service providers. Since players within the securities industry may be expected to make efforts to distinguish similar products legally, patenting may also increase consumer confusion about product features and attributes.

Brokerage

Brokerage involves bringing together buyers and sellers, facilitating trades through the maintenance of a marketplace, and assuring that the trade is complete. The significance of this activity as part of the operations of the securities industry cannot be overestimated. Traditionally, all of the costs of supporting an investment bank or brokerage house were recovered through this portion of the business. The services provided to clients, such as research support and advice, were bundled into the commission rate for purchasers of securities and into the spread on new issues for investment banks.

The heart of brokerage with retail clients has been personal selling. The relationship between the investor and the individual broker has been fairly constant, and typically, the accounts a registered representative develops while with a particular brokerage house move with him if he/she switches firms. Firms within the industry have expended great effort in attempts to retain clients. The development of new products unique to particular houses may encourage a loyalty to the company rather than to the broker. It is not yet clear how this might change the character of the industry.

Most technology-encouraged competition is occurring within the selling function of retail and institutional brokerage. The end of standardized commissions on the sale of securities (1975) has encouraged the entrance of discounters into this market. *Discount brokers* complete trades for investors at prices that are generally lower than the commission charged by full-service brokers. Usually, the service provided by discounters is limited; e.g., these firms usually do not support extensive research and advice operations. However, they do fill the needs of a portion of the market. About 15 percent of trading by individual investors is handled by discounters.

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[29] Ibid.

Access to information technology for individuals will facilitate direct selling of securities to investors without the interaction of a broker. This type of system is particularly adaptable for discount brokers whose service is basically order-taking. C. D. Anderson & Co., a small discount broker, developed the first home brokerage system, and other brokerage houses are expected to enter this market.[30] C. D. Anderson's system allows clients, who pay a hook-up charge and a usage charge, to enter buy and sell orders at their convenience, without dealing with a broker.

Transactions

Congress mandated the development of a computerized national stock market system in 1975, believing that by linking all market centers, such a market would expose securities to a greater number of buyers and sellers, and an investor would have the chance to obtain the best price available. This system was also expected to provide competition to NYSE, which dominated the market with 80 to 90 percent of the trading volume.

The Cincinnati Stock Exchange was expected by many industry experts to become the basis of an automated national stock exchange. The exchange was supported by Merrill Lynch, the largest firm within the securities industry. In July 1983 Merrill Lynch withdrew a large portion of its business from the Cincinnati Stock Exchange and returned it to the floor of NYSE, noting that not only had the Cincinnati Stock Exchange failed to gain the volume anticipated, but that NYSE had improved.

While NYSE is still largely based on a system of auction pricing and securities specialists, the adoption of systems made feasible by the application of information technology has allowed it largely to eliminate problems associated with high volume. In addition, communications systems have been developed that allow users of NYSE to enjoy many of the benefits of a national system by providing information on the activities of regional exchanges. One such system, the Intermarket Trading System (ITS), may be seen as being indicative of a trend toward a national market for securities trading.

ITS allows brokers, specialists, and market makers to interact with their counterparts at other markets. The system, maintained by SIAC, currently involves eight stock exchanges: New York, American, Boston, Philadelphia, Cincinnati, Midwest, Pacific, and, to a limited extent, NASDAQ.

ITS provides a mechanism through which the most favorable exchange setting can be chosen for a transaction.* At NYSE, the best price from any member of ITS, as well as the NYSE floor price, is displayed. If it is advisable for a trader to deal on an exchange other than the one at which he is operating, he can enter his order by contacting his counterpart there. At the end of 1982, 1,039 issues were eligible for trading on ITS. NYSE reports that this represents most of the stocks traded on more than one exchange.

The Designated Order Turnaround (DOT) system was introduced in 1973 to route small orders (599 shares or less). It reports electronically between NYSE and member firms. DOT bypasses floor brokers by routing orders directly to the appropriate trading post on the floor of the exchange and, following execution, back to the member firm on the same electronic circuit. Over 80 percent of the 5.7 million market orders processed through DOT in 1982 were executed and reported back to the member firm within 2 minutes.[31] This system minimizes the cost to member firms of handling small transactions while giving small investors the benefit of timely execution of their trades. DOT may also provide a better price than would normally be received by a small investor. A trade made through DOT is matched by computer for price with the most recent trade of that issue. The investor benefits because the price he receives may have resulted from price negotiation on a much larger order.[22]

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[30] Carrington, op. cit.

*For purposes of this discussion, "transacting" is defined as the physical execution of trades.

[31] *New York Stock Exchange 1983 Fact Book*, op. cit.

Another technology-dependent system that facilitates transacting is the Opening Automated Report Service (OARS). OARS makes efficient and accurate processing of market orders, that are received at NYSE prior to the start of daily trading, possible without causing unnecessary delays in the opening of trading, and transmits computer-generated reports to the originating member firm.[23] This system is especially valuable to specialists on days with high trading volume, which have recently been occurring with great regularity.

Future developments in transacting enhanced by information technology may include the bypassing of intermediaries in the process of selling. Some experts believe that the adoption of home information systems may make it more common for investors to complete transactions between themselves privately or to gain direct access to exchange floors. While it does not appear that the possibility of off-market trading is having a major impact on the individual investor at this time, institutional investors have at times found it advantageous to trade off-market.

About 500 brokerage houses, pension funds, insurance companies, and other institutional investors are linked through AutEx Systems, a nationwide computer network. The potential of this system for trading was demonstrated by its use in creating a market in a stock for which trading had been closed by NYSE. Jefferies & Co. is a discount broker specializing in institutional trading. It is not a member of any major exchange and therefore is able to make a market in an exchange-listed stock without going through the exchange. Following a request by a client, Jefferies announced over the AutEx System that it was making a market in the closed stock. The company traded a total of about 8 million shares of the stock off-market.[24]

Given that the primary responsibility of securities exchanges is to maintain an orderly market, technology, the great facilitator of their operations, could also be a major undermining force for the exchanges. It is basically meaningless to stop trading for a security on an exchange if the end result is simply that trading is moved off of the exchange and conducted without the prudent management of the specialist. It may be essential for exchanges to continue trading a given security in all but the most unusual situations.

Clearance and Settlement of Securities

Clearance and settlement activities consummate trades through the exchange of securities and funds.[25] As with any marketplace, an action recognizable to all parties involved is necessary for finalizing a transaction. Given the great number of participants in the securities industry, it is essential that transactions be closed as efficiently as possible in a manner that is acceptable to all parties involved.

The increasing volume of trade and the continuing development of new securities products has made it necessary to refine settlement and clearance. Since ownership is merely contractual until the process is finalized, delays in settlement and clearance could have a severe effect on the operation of securities markets. An industrywide effort is under way to move toward a national settlement and clearance procedure through the adoption of standardized proofs of ownership that are not paper-based, such as book entry, and to facilitate effective, marketwide clearance through the use of automated systems that assist in the closing of positions.

Clearance and settlement are recognized as an important portion of the national market system. The formation in 1977 of the National Securities Clearing Corp. (NSCC), for which SIAC (Securities Industry Automation Corp.) is facilities manager, encouraged movement toward a national clearing system. NSCC combined the clearing corporations of NYSE, the

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[22] Desmond Smith, "The Wiring of Wall Street," *The New York Times Magazine*, Oct. 23, 1983, p. 109.

[23] New York Stock Exchange, *Annual Report 1982*, New York, p. 33.

[24] Smith, op. cit., p. 73.

[25] National Securities Clearing Corp., *Annual Report 1980*, New York.

American Stock Exchange, and NASD. It has provided more efficient clearing at lower costs per trade for listed and over-the-counter trading than was previously possible. SIAC facility management for NSCC services integrates several major processes and entities in the settlement process (see fig. 5).

One pivotal change in the settlement process was the development of Continuous Net Settlement (CNS). CNS represented a change in accounting approach to the provision of continuous net positions against the clearing system rather than a daily balance order accounting.[36] In addition to improving clearing operations, savings recognized through the application of CNS have included manpower and same-day delivery of securities. An important link in this system is the Regional Interface Operation, which allows member organizations to trade on any exchange and bring settlement to the clearing facility of their choice.

The Options Clearing Corp. (OCC), which is owned by the options exchanges, is the clearing entity for options trading. It supports the clearing members and participant exchanges by acting as the issuer of all cleared and settled options, guaranteeing option contract performance and fungibility, and effectively performing trade clearance, settlement and associated clearing functions, and other securities industry services.[37] The primary objective of OCC is to provide these services in the most cost-effective manner.

Information technology has been essential in the refinement of the clearing and settlement process. It will affect it further through some changes that will be felt in the market as a whole. If substantial trading is conducted off-market, general access to the automated settlement system may be demanded.

Pricing

Pricing occurs at two points in the securities industry: investment bankers assist in the initial pricing of new issues, and exchanges provide a framework for price adjustments for securities. Price in its most pure form is a function of supply and demand. For securities, this is generally defined to mean the net present value of anticipated cash flow, in terms of what is received in interest or dividends and resale. Initial pricing decisions on new issues are particularly sensitive for the securities industry since the risk associated with errors usually falls totally on the underwriter. If the price is not in line with value as perceived by the market, the issue will not be bought.

Pricing for securities in secondary markets may be done on a historic basis or by auction. Automated trading systems are based on a historic pricing mechanism; that is, the price of an instrument is determined by its past behavior. Prices in the auction system are determined by market demand. Proponents of this system believe that the auction gives a truer evaluation of the worth of the issue and is therefore beneficial in the aggregate to both sellers and buyers.

The operation of the secondary market for securities provides a method for correcting prices. Securities specialists perform a pricing function on exchange floors in fulfilling their function of maintaining an orderly market. The specialist, an independent businessperson, performs this function as an auctioneer, buyer, and seller of securities. He makes a value judgment about the opening price of a security at the beginning of each day when opening trading. Although no trading may occur throughout the day, this establishes a price of record.

The specialist facilitates trades by interested brokers on the floor and stands in as a buyer or seller at times when demand and supply on the floor do not mesh. By standing in as a buyer or seller, the specialist maintains an orderly market by assuring that price changes occur in small increments. This allows investors to assess the market situation of a security in a rational fashion.

NYSE now offers a technology-based system through which investors can more easily interact with the market when they want to sell a security at a set price. The limit order

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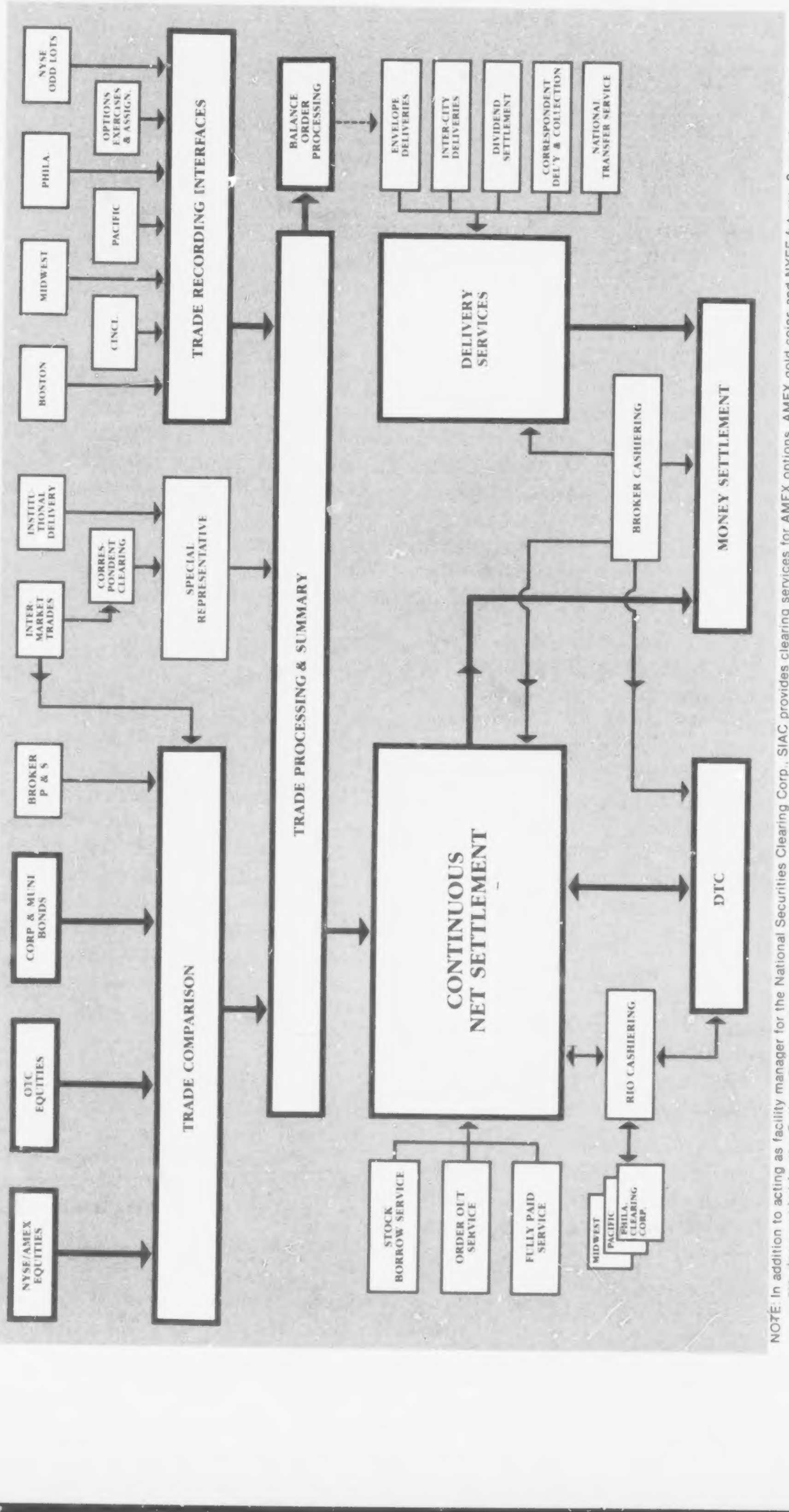
[36] Securities Industry Automation Corp., *A Decade of Progress*, New York, 1982, p. 8.

[37] The Options Clearing Corp., *Annual Report 1981*, Chicago.

Figure 5.—Overview of SIAC Facility Management for NSCC Services


NYSE/AMEX EQUITIES
OTC EQUITIES
CORP & MUNI BONDS
BROKER P & S
INTER MARKET TRADES
CORRES-PONDENT CLEARING
INSTITU-TIONAL DELIVERY
BOSTON
CINCI.
MIDWEST
PACIFIC
PHILA.
OPTIONS EXERCISES & ASSIGN.
NYSE ODD LOTS
TRADE COMPARISON
SPECIAL REPRESENTATIVE
TRADE RECORDING INTERFACES
TRADE PROCESSING & SUMMARY
BALANCE ORDER PROCESSING
ENVELOPE DELIVERIES
INTER-CITY DELIVERIES
DIVIDEND SETTLEMENT
CORRESPONDENT DEL'Y & COLLECTION
NATIONAL TRANSFER SERVICE
STOCK BORROW SERVICE
ORDER OUT SERVICE
FULLY PAID SERVICE
CONTINUOUS NET SETTLEMENT
DELIVERY SERVICES
BROKER CASHIERING
MIDWEST
PACIFIC
PHILA. CLEARING CORP.
RIO CASHIERING
DTC
MONEY SETTLEMENT

NOTE: In addition to acting as facility manager for the National Securities Clearing Corp., SIAC provides clearing services for AMEX options, AMEX gold coins and NYFE futures. Support services are also provided for the Options Clearing Corp., Pacific Clearing Corp. and Depository Trust Co.

SOURCE: Securities Industry Automation Corp.

system electronically files orders to buy or sell when a specific price is reached. These orders are delivered to the appropriate trading post or member firm on the floor. Orders can be limited to a single day or to their cancellation.

In the context of the securities industry, pricing has referred solely to the investment instruments of corporations and organizations. Pricing can also be expanded to the actual services of the industry, whose basic functions are being unbundled. Although within the securities industry pricing is most clearly evident in the selling and advising function, it is a factor throughout the entire financial service industry. The securities industry may have an advantage relative to other financial service providers in this area because of the expertise it has in analyzing markets and in pricing issues.

Technology and the Functions of the Securities Industry

Technology is changing not the functions of the securities industry, but rather how they are performed. The number of corporations seeking financing, the number of potential investors, and the level of trading demanded have all increased to levels that could not be anticipated when the securities industry was developing. The one element which has not increased is the number of hours in a day, and technology makes it possible to overcome that handicap in processing the level of activity demanded by the market.

Time and distance are no longer obstacles to communications for the securities industry. Because of this, securities markets may become less location-dependent and, as a result, less physically structured. It will be necessary for the industry to make efforts to assure that the basic purpose of the markets is retained.

Information technology will generate a faster reaction by the securities industry to changes in market conditions and consumer demands because communications and computer capabilities may lessen consumer response time. The market can be expected to operate at a more rapid pace, and while it may be possible to monitor change more precisely, this market will require quick and well-developed decisionmaking.

The Effects of Information Technology on Securities Instruments

Securities instruments are designed to satisfy both the goals of investors and the need of corporations and organizations to gather capital to finance industrial research and development and resulting expansion or diversification. Securities instruments are of interest in discussions of the effect of information technology on the financial service industry for several reasons. First, the direct impact of technology on the securities industry, from the point of view of the consumer, may be most strongly felt in the way in which the characteristics of investment instruments are changed. Second, the intrinsic characteristics of securities instruments may affect the way in which they evolve in a technology-intensive environment. As information technology changes the way in which the securities industry operates, the relative importance of various investment instruments may be affected by information technology.

Third, interest in instruments that are now on the market may be predictive of which investment products may best meet future demands of consumers in terms of liquidity, level of risk, and return. This type of activity has already been seen in the financial service market in the development of money market mutual funds, which were patterned after the idea of mutual funds and met the consumer demand for more liquidity.

The development and trading of securities instruments is largely dependent on the application of information technology. Such technology has also had a major impact on the calculation and payment of return and the recording of ownership. The rate of growth seen in options and many types of futures contracts would not have been possible without communications and computer technologies. As securities markets become more technology-based, it must be expected that investment instruments will also.

However, it is unlikely that technology will be the sole cause of the development of any new securities product, although it may change the characteristics of some investment products or expand their application to such an extent that they are different in function and operations. As a result of these changes, both investors and their advisors will have to examine their methods of evaluating potential investments. The characteristics of investment instruments may be expected to change in four ways because of the application of information technology: liquidity of instruments, the packaging of securities products, the way in which potential investments are analyzed, and the importance of speculative markets.

The liquidity of an investment instrument is determined both by the contractual term of the instrument and the speed with which the investor can trade or redeem the instrument. New communications technologies, notably interactive cable and the adoption of personal computers with networking capabilities, have been applied to allow investors greater access to securities markets. For example, systems available to individual investors provide updated information continually on price and significant activities involving securities in which the investor is interested. Easier access to this information changes the way investments are analyzed by making it easier for the investor to make decisions on his portfolio in a short time frame.

Securities products are being packaged, often with products from other financial service industries, to fill a wider range of investors' financial needs. This trend is likely to continue as the number of investment options increases and the demands of users become increasingly more complex. Much of the new product development that will be seen in securities markets may result from the increasing role of speculative markets. The ability of investors to use speculative markets is increased by the application of information technology.

Appendix 3A: Securities Instruments

This appendix describes, the characteristics of debt and equity instruments as well as options and future contracts. The relationship of information technology to these products and the future effects of this technology are outlined.

Corporate Capital Structure: Debt and Equity Issues

The capital structure of a firm is determined by the mix of securities it issues. Capital is developed through internal sources—i.e., retained earnings—and through the issuance of debt and equity. A corporation tries to maximize its market value through this structure. There can be as many unique capital structures as there are corporations. The financing plan chosen reflects the operating and growth objectives of the organization.

While the basic purpose of all debt and equity issues of a firm is the same, to gather capital, they represent different costs and concessions for the issuing organization. The return offered and risk involved for the investor also differs substantially. When debt is issued through bonds, the investor becomes a creditor to the organization; the firm assumes a noncontingent obligation to pay the investor a definite sum of money. Equity issues grant ownership in the corporation in return for investment. Such shares of stock represent ownership rights proportional to the value of the share of the firm purchased at the time of investment.

Financing through debt is developed both through money markets and capital markets. Money markets are basically wholesale markets whose major function is liquidity management. They are centered on short-term instruments through which organizations can manage such operating factors as cash flow. Capital markets are centered on long-term securities, including both debt issues and stock, and represent the development of financing for long-term projects and goals for the organization, such as equipment purchases, research and development, and expansion.

Long-Term Debt—Corporate Bonds

When money is borrowed on a long-term basis, the contract representing this debt takes the form of a bond. A corporate bond is a fixed, noncontingent, long-term obligation to pay a definite sum of money and interest on that amount. The fortunes of the corporation affect the resale potential of the security but cause the bondholder neither benefit nor loss in terms of return, assuming that the corporation does not default on the issue.

The market value of the instrument is the present value of the payments stream to the investor, using market interest rates. The bondholder is a creditor to the corporation and as such has a claim on the assets prior to any by the owners. Corporate bonds have a fixed return, known as a coupon rate, and a specific maturity. The financial benefit the investor realizes from the bond depends on market conditions at purchase and investment opportunities at the time of maturity. A bond issue may be distinguished in several ways, most notably: how the contract is guaranteed in case of bankruptcy, call provisions, registration, the way in which interest is paid, and the way in which the bond issue is retired.

SECURED AND UNSECURED BONDS

Bonds may be classified as secured, or mortgage, bonds or unsecured bonds, called debentures. *Mortgage bonds* are backed by specific corporate assets and were historically most popular among regulated industries, such as railroads and utilities. A closed-end provision in a mortgage contract requires that the corporation secure no additional bonds on the lien. The majority of contracts, however, include an open-end provision that allows for the issuance of additional bonds against the property. From the investor's point of view, the value of the mortgage lies more in the potential resale value of the pledged property in the case of corporate failure than in the exclusivity involved.

Debentures are guaranteed by the general credit of the corporation. They have become the most popular form of bond issue across the economy and are particularly useful for industries in which many assets may be intangible, such as in publishing, or have a limited lifecycle, as is the case in many high-technology industries. Most issues of debentures include a negative pledge clause that provides that the firm will issue no new debt having priority over the bonds covered by the agreement. This helps ensure that the risk to the investor does not increase over the life of the bond. Debentures are usually subordinate to bank loans and short-term debts.

BEARER BONDS AND FULLY REGISTERED BONDS

Registration of bonds affects the extent to which the investor is protected in case of loss or theft, the way in which interest is paid, and the ease with which ownership can be traced and transferred. The ownership of a fully registered bond is recorded in the register of the issuing organization or agent. Company records comprise proof of ownership, and interest is paid directly to the holder of record. If the bond is traded, the issuer or agent must be notified so that ownership rights may be transferred.

For a bearer bond, the certificate issued at the time the debt instrument is developed is the only proof of ownership. Ownership rights are enjoyed by whoever has possession of that certificate at the moment. Many investors find that the ease with which the bonds may be transferred and the lack of traceability outweighs the risk of losing the paper. This type of bond is an extremely flexible, cashlike instrument.

Whether a debt instrument is a registered bond or a bearer bond affects its value and appropriateness as an investment for particular investors. Since July 1, 1983, the Federal Government has required all new bonds to be registered to make it easier for the Internal Revenue Service to determine to whom interest is paid and to trace any changes in ownership. However, there is still a significant secondary market in bearer bonds.[1] As the bearer bond is eliminated from the market, some increase in demand for different instruments that safeguard the privacy of the investor to a similar degree may be expected.

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[1] "The High Price of Financial Privacy," *Business Week*, Aug. 1, 1983, p. 97.

A significant difference between bearer and registered bonds from the point of view of both issuers and investors is the way in which interest is paid. The holder of a bearer bond initiates the payment of interest by depositing the appropriate coupon at the financial institution of his choice. Federal Reserve collection mechanisms are used by the institution to obtain credit for the interest due. Usually, the depositor is paid the interest by the financial institution prior to the completion of this process; in most cases, immediate use is granted. The payment system for bond coupons is extremely paper-based. The physical coupon "follows" the collection process.

Greguras and Carlile suggest that as new technologies make it possible to record essential information in the physical coupon in a format that can be used by electronic systems, this type of system will allow financial institutions quicker access to their funds and, as a result, benefit the investor.[2] Information contained in the coupon could be transformed to electronic form at the point at which the coupon enters the redemption process.

The electronic system proposed would result in little, if any, change in the action required by the investor. Presentation of coupons would remain the same; from the investor's viewpoint the coupon is already truncated since it is never returned to the holder. Cost-saving benefits result for the issuer of the bond, the paying agent, and the financial institution used by the bondholder. Greguras and Carlile point out that computer sort capability could replace the current labor-intensive system used by issuer and holder.[3] The electronic system would be faster and would facilitate the development of computerized bookkeeping and settlement systems. It is not clear how the end of new issues of bearer bonds will affect the possibility of automating the interest payment process, although the potential application of this type of system will naturally decline.

The payment of interest on registered bonds is easier because the paying agent knows the holder and initiates the payment process. Greguras and Carlile note that there is a great potential to use automated clearing houses (ACHs) for these transactions. Following the issuance of a payment order specifying which accounts should be paid by the bond issuer or paying agent bank, the ACH could take responsibility for routing these interest payments, which would be credited to an account specified by the bondholder. Savings would result from the elimination of check-processing costs.

RETIREMENT OF BONDS

Bonds may be retired by payment at final maturity; by conversion to common stock if the instruments are convertible; by refunding, through enacting a call provision; or through periodic repayment, if the bond is a sinking fund or serial bond issue.

Many bonds contain a provision allowing the corporation to "call" or repurchase the debt instruments at any time. This gives corporations flexibility if market conditions change before the bond matures. The call price is usually above the face value of the bond, but generally this premium decreases as the maturity date is approached. A corporation may move to call a bond because of a drop in market interest rates or to be free of restrictive protective covenants that may have been necessary to gain financing initially. The initial debt contract specifies whether the call provision is immediate, that is, can be invoked at any time following issue, or deferred, in which case the investor is assured that no call will take place for a definite period of time, usually 5 to 10 years.

Call provisions become a disadvantage to investors when the stable return anticipated when the debt instrument was selected for investment is lost. The investor may find it necessary to select an alternative investment. If interest rates have dropped since the original investment, the investor must not only bear additional transaction costs but also, in some cases, select between less attractive investment alternatives.

For tax purposes, the income gained by the investor from the call premium is treated as a capital gain. For the corporation it is deducted as an expense from ordinary income. Many experts believe that the net tax advantages received by the investors and the corporation make call provisions attractive to both parties.[4]

Refunding involves the replacement of one bond issue, prior to maturity, with a new issue of bonds. A corporation may wish to refund an issue to escape restrictive protective covenants, but the most common reason is to take advantage of a drop in market interest rates. Market conditions must be extremely favorable for the issuing corporation to justify the expenses involved in refunding, which include the cost of calling the old bonds, issuing the new bonds, and, possibly, expenses resulting from the payment of interest on the old bonds during any overlap period.

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[2] Fred M. Greguras and Larry L. Carlile, "The Use of Electronic Banking for Bond Coupon Payments," 1980.

[3] Ibid.

[4] James C. Van Horne, *Financial Management and Policy* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1983), p. 555.

The repayment of a total issue of bonds at maturity could present a severe cash strain for the issuer. Therefore, two methods have been developed through which debt issues are retired in a more controlled and gradual manner: the issuance of serial bonds and sinking fund provisions. Serial bonds give an investor a choice of maturity dates. The entire package of bonds is issued by the corporation at the same time, but the bonds mature individually in successive years.

Most bond issues carry a provision requiring that the corporation retire a given number of bonds per year through a sinking fund managed by a trustee. The bond issuer makes payments into the fund, with which the trustee finances the retirement, by calling or purchasing bonds selected (usually) by lottery. While calling before the anticipated maturity date may be undesirable for the investor, most investors value the assurance of orderly retirement of debt and liquidity provided by a sinking fund provision. For bondholders whose instruments are not called, the sinking fund may represent a reduction in risk, as the total amount of debt the organization holds is continually reduced.

PAYMENT OF INTEREST

The return of most debt investments is embodied in a periodic interest payment referred to as the coupon. It is designed to compensate the investor for the time-value of money, the lost opportunity cost, and the risk assumed. Usually, this is a semiannual payment. The market value of the bond is determined by the present value of this stream of payments. Bonds with less traditional payment schedules have developed in response to market pressures. These include income bonds, zero- and low-coupon bonds, indexed bonds, and floating-rate bonds.

While most bonds are strictly debts of the corporation, for which interest must be paid regardless of the corporation's financial situation, interest is only paid on income bonds when the earnings of the corporation permit. The corporation benefits from the tax advantages of debt, since any interest paid is deductible because it is part of a contractual agreement. Also, unlike preferred stock, which is discussed later, the decision to pay interest belongs to management rather than the board of directors. If not paid, interest accumulates and is senior to preferred and common stock dividends and subordinated debt.

Income bonds are unpopular with investors because the income stream from their investment is unpredictable. Some experts also believe that the past association of this instrument with corporations, particularly railroads, trying to avoid bankruptcy has made them unattractive to investors. As a result, income bonds are used primarily in reorganizations, which of course may perpetuate their negative image.[5]

Return paid on a *zero-coupon* bond is embodied entirely in price appreciation to maturity. No periodic interest payment is made. This bond offers two advantages to the investor: the bond cannot be called, so the holder experiences no reinvestment risk, and an exact return is assured if the instrument is held to maturity. For tax purposes, the investor must declare the interest accrued in a given year as interest income, despite the fact that this money is not available for his use. The corporation also deducts the interest expense for the year accrued, although no actual payment is made. While the corporation enjoys the advantage of no cash outlay until the maturity date of the bond, the no-call provision is a disadvantage if market interest rates fall during the lifetime of the bond.

Two types of bonds, floating-rate and indexed, have become more popular in response to the concerns of both issuers and investors that long-term debt instruments have generally been locked into a rate of interest that reflected market conditions at the time of issue, but that may not be desirable if market conditions change. For example, *floating-rate bonds,* which include instruments for which the interest rate is set in relation to 90-day Treasury bills, may be attractive to an investor who believes that interest rates are likely to rise during the lifetime of the bonds, and to an issuer who feels rates will fall. To both parties the uncertainty about the return that will be received and the cost of the borrowed funds may be disadvantages.

The return on *indexed bonds* is tied to the rate of inflation and therefore is considered fixed in real terms. These bonds become popular in times of high inflation. In theory, any index can be selected as a basis for setting the rate paid on this type of bond; however, in the United States the Consumer Price Index is generally used.

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[5] Ibid., p. 551.

Information technology may be expected to increase the number and complexity of different types of interest-paying plans for bonds. Indexed and floating rates can be designed to respond more quickly to changes in the base line on which interest is determined. This may result in some confusion for bondholders, as change may occur at such a rapid rate that the logic behind it may not be perceived. More complex interest-paying arrangements will require special attention to the disclosure of these bond characteristics for investors, a role likely to be the responsibility of brokers and issuers of bonds.

RATING OF BONDS

Two highly respected rating services for bonds are Moody's Investors Service and Standard and Poor's. Their ratings result from an analysis of the financial and business propects of the issuer and are used by individuals and financial institutions as a tool for assessing risk.

Moody's Investors Service offers nine possible ratings, ranging from a low of C, which represents extremely poor prospects for the issuer, to a high of Aaa, which represents an extremely low amount of risk and predicts that it is unlikely that any negative change will affect the issue. Generally, organizations with poor ratings must pay a higher rate of interest to borrow funds to compensate lenders for risk.

It is rare for the rating of an issue to change. Any reevaluation by Moody's or Standard and Poor's indicates a very substantial change in the condition of the issuing firm and attracts a great deal of attention from investors.

Those bonds that Moody's rates "Baa," the fourth highest rating, or above are considered investment-grade bonds. Some financial institutions, including some commercial banks and many pension funds, are not allowed to invest in any issues that do not make this grade. Some experts believe that rating services have caused certain types of organizations, particularly municipal governments, to pay higher than warranted interest rates because of unfavorable and perhaps somewhat subjective ratings.[6] However, investment counselors and investors still rely heavily on the rating services.

Information technology may be expected to create more competition in rating bonds as the capacities of new online computers and interactive cable are explored. As technologies become more sophisticated and interactive systems become less costly, it has become possible to personalize rating services to the objectives of the individual investor in real time.

BOND TRUSTEES

As will be discussed later, the interests of the shareholders of a corporation are represented by the board of directors. Bondholders have a special representative—the trustee—who is not part of corporate management and who is expected to act in bondholders' best interests. Paid by the issuing corporation, the trustee is usually a commercial bank. The responsibilities of the trustee for bond issues over $1 million are specified in the Trust Indenture Act of 1939 and involve protecting the rights of the bondholders by ensuring both that the initial contract is legal and, following the issue, that the corporation fulfills its contractual responsibilities to the bondholders. This act, which is administered by the Securities and Exchange Commission (SEC), requires that the trustee act strictly in the best interests of the bondholders.

It is the responsibility of the trustee to act to protect the interests of the bondholders if the company is in default—that is, fails to meet the provisions of the bond contract. This responsibility has been brought to the forefront by the recent default on Washington Public Power Supply System (WPPSS) bonds. A problem the bond trustee appears to be encountering is reaching and purveying information to the 78,000 holders of the bonds.

In spite of the press received by the WPPSS default and the efforts by the trustees to reach and inform bondholders, it appears that, prior to the first missed coupon payment on the WPPPS bonds, many bondholders did not know or did not understand that there was a problem.[7] Communication technology may facilitate attempts by the trustees to reach bondholders in the future by improving information flows and corporate recordkeeping.

THE EFFECT OF INFORMATION TECHNOLOGY ON LONG-TERM DEBT INSTRUMENTS

Long-term debt is likely to remain a significant part of corporate capital structure. Information technology may change the approach of organizations searching for finance and investors seeking debt instruments as the following impacts of the main advantages of automated systems are felt: increased speed of handling information, more precise and less expensive analysis, and improved communication systems.

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[6] Brealily and Myers, p. 468.

[7] Lynn Asinof, "WPPSS Begins to Cause Pain for Investors," *The Wall Street Journal*, Dec. 28, 1983, p. 15.

Equity

A firm may also decide to gather capital through issuing equity, or ownership rights, in the form of corporate stock. The investor receives with the shares of stock he owns rights proportional to the total amount of stock issued by the corporation. Equity capital strengthens the balance sheet and enhances the future borrowing power of the company. Decisions to issue debt or equity are usually based on what will maximize the market value of the corporation.

From the point of view of potential investors, the purchase of equity may give the opportunity to share in the growth of the company. As some, if not all, of the return received may be in the form of capital gains, the investor may find a tax advantage in equity investments. Equity shareholders may also receive an income stream in the form of dividends as a form of return on their ownership. In some cases, this return may be greater than what would be realized from a debt investment. While tax laws have been subject to change, at times there have been tax advantages from income in the form of dividends rather than interest.

A firm may sell equity in two forms: common stock or preferred stock. The choice will depend on the financial structure and objectives of the corporation and on industry and market conditions. The equity profile of a corporation may be extremely complex. Both common and preferred stocks may be issued, and several varieties of preferred stock may be active simultaneously.

COMMON AND PREFERRED STOCK

Common stock is generally more significant than other types of securities in the capital structure of a firm. The holders of common stock have residual rights to the income of the firm, which they usually receive in the form of dividends. At the same time, the liability of individual shareholders is usually legally limited, particularly for the debts of the corporation. Additional rights of holders of common stock include a claim on company assets in the case of bankruptcy, following the claims of creditors and holders of preferred stock; the right to maintain their share of ownership through purchase of new shares issued by the corporation; the right to information on the operation of the firm, to the extent that it is competitively feasible; and the right to transfer ownership to another investor.

The most significant benefit for the owner of common stock is the right to maintain control of the corporation through the election of the board of directors, who in turn appoint the officers of the firm and represent the interests of the holders of equity in the firm. The management of the corporation is expected to act in accordance with the goals of the owners and to be accountable to them through the board.

Preferred stock is considered a safer investment because holders of these shares have a claim on the assets of the company before holders of common stock, although after the holders of debt, in the case of bankruptcy. Owning such stock also carries a prior claim to income in the form of dividends. However, the preferred stockholder usually enjoys only limited voting rights, so that he has less impact on the operation of the corporation than do common stockholders.

DIVIDENDS

Depending on the corporation's profits, corporation earnings may be used to pay dividends to stockholders at the behest of the board of directors. Dividends are only declared when the payment will not impair the operation of the firm or legally compromise its contractual relationships. tionships.

Two significant dimensions of the dividend policy of a corporation are dividend stability and long-run dividend payout ratio.[8] A dividend may be stable in terms of real dollars paid out or in the ratio of dividends to earnings. While the latter may appear more rational, it is rarely used. Consideration of the return expected by stockholders has led most corporations to pay a stable dollar dividend when possible, indicating the importance of income as a motivation for investing in equity issues.

Decisions on long-run dividend payout ratios may be based on the objectives of the owners and management of the firm. The reinvestment of a significant portion of earnings may result in higher growth for the corporation as a whole and may be attractive to investors desiring long-term income in the form of capital gains. In this case, earnings are used as a form of internal financing, and any dividend paid is from earnings left over after financing objectives are met. If the shareholders of the corporation are interested in more immediate income, a fixed payout may be used. In this case, the amount of money available for internal financing would differ from year to year as it would be, in a sense, the residual part of earnings.

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[8] Lawrence D. Schall and Charles W. Haley, *Introduction to Financial Management* (New York: McGraw-Hill, Inc., 1980), p. 366.

THE EFFECT OF INFORMATION TECHNOLOGY ON EQUITY

Information technology may be expected to affect equity instruments directly in three areas: the payment of dividends, the recording and proof of ownership, and the transfer of ownership. The transfer of ownership of stock will be examined as a function of the securities industry in a later section.

The improved ability of shareholders to monitor and analyze the activities of corporations more directly through the use of new technologies may also have some impact on individual firms. The magnitude of this impact will largely depend on the characteristics of the ownership of the corporations involved. An increased awareness by the shareholders of the evironment and operation of the firm may be a benefit; however, managements and boards of directors may find an increased demand for information dissemination and responsiveness.

Detailed records are maintained on who the corporation's shareholders of record are to assure that they receive their ownership rights. While traditionally this operation was solely paper-based and involved the issuance of certificates that served as proof of ownership, there is some indication that the application of information technology is facilitating a movement toward a book entry system. This type of arrangement is expected to benefit the issuers of equity by lowering operating costs, including those of printing and postage, and to benefit the holders of equity by making it easier to transfer ownership of these securities.

Book entry may require some adjustment by shareholders because the mechanics of proof of ownership will differ. The success of this type of program will depend largely on how apparent and important the benefits involved are to the investor, particularly when trading.

The mechanics of developing a dividend policy may be aided by the application of information technology; however, the value of improvements in communications and computer capabilities is likely to be most directly felt in the actual paying of dividends. Operation costs for this activity may be expected to decline as recordkeeping and sorting activities can be automated. It may also be possible to use electronic funds transfer for the payment of dividends. While initial costs for this type of system may be high, the resulting efficiencies and the decrease in postage costs may be of great benefit.

Convertible Securities

Preferred stock or bonds that can be converted to common stock at the option of the holder are called convertible securities. Such securities offer a middle ground to investors who demand lower risk than common stock carries yet want to participate in the growth of a corporation.

Convertible bonds offer both interest payments and conversion opportunity. This instrument is attractive for the issuing corporation because generally a lower-than-market rate of interest may be offered, owing to the conversion option. A corporation may view a convertible bond as both a short-run debt and long-run equity issue without the cost of two separate issues. Convertibles are considered deferred common stock financing. These instruments were also traditionally attractive to new or speculative corporations unable to gather equity capital on other terms or to corporations with low-grade credit ratings.

Compared to the issuance of common stock, the issuance of convertible bonds creates less dilution of earning per share at the time the bonds are first offered and at the time of conversion. At the time the bonds are issued, no stock is involved; at conversion, the size of the conversion generally adds fewer shares than a new issue of common stock would. Usually, it is expected that the financial condition of the issuing firm will be improved in both yield and stability at the time of conversion, as indicated by the fact that the conversion price is higher than the market price of the common stock at the time the bond is issued.

The stock package stipulated in the conversion plan may be more favorable to the organization than one designed later when changing market conditions could be taken into account. The expectations of investors for the common stock provision may be less stringent at the time the bonds are issued because of both the benefits to be received before conversion and the anticipation of participating in corporate growth at the time of conversion.

The tax provisions of typical convertible bonds may be beneficial for investors. The conversion of the bond to common stock is considered a tax-free transaction by the Internal Revenue Service. The year-plus-one holding period for long-term capital gains on any subsequent sale of the common stock is counted from the time the bond, not the stock, is issued.

One variation on convertibles that often results from failed takeover bids is the *exchangeable bond,* which can be converted to the stock stipulated in the bond contract of a corporation. This stipulated stock may be issued by someone other than the issuer of the bond. The exchangeable bond requires the investor to evaluate the credit potential of the issuing corporation and the long-range growth and earning potential of the firm whose common stock is involved. Tax provisions must also be a major concern for such an investor.[9] The Internal Revenue Service considers this conversion to be the equivalent of two cash transactions because the securities of two different corporations are involved. Since the bond would not be redeemed by a rational investor unless the stock sells for more than the original cost of the bond, a taxable gain is realized.

Recently, the interest in this bond instrument by both corporations and investors has grown. While in the past institutional investors dominated this compromise market, individuals are becoming more active. Information technology may be expected to affect convertible instruments to the extent that it makes more sophisticated analysis cost effective for investors and financial intermediaries, and therefore the complex nature of the instrument may be less of a disincentive to potential issuers and investors. Growth in this area may be expected, however, to be related primarily to the fiscal needs of corporations involved and to the demands of consumers.

Short-Term Debt— Money Market Securities

The essential characteristic of money market securities is their liquidity. This derives from their short maturity, by definition less than 1 year, and the generally high quality of the issuing organization.[10] There are several types of money market securities and, as the market demands, it is likely that additional instruments will be developed. These short-term debt instruments include Treasury bills, certificates of deposit, commercial paper, bankers' acceptances, and repurchase agreements. They are important to corporations in money management as both financing tools and investment tools.

A *Treasury bill* is a short-term debt of the U.S. Government. The bills are sold on an auction basis at a discount from face value. Since the U.S. Government is continually borrowing to pay off debts, Treasury bills are issued on a very frequent basis. Biddings are closed by the U.S. Treasury weekly for 91- and 182-day debt issues and monthly for 9- and 12-month bills. Short maturities and the backing of the U.S. Government make them desirable investments.

Although the market is quite short-term, an active secondary market has developed. Therefore, bills can be traded before the maturity date, adding to their liquidity. Treasury bills are a desirable short-term investment tool for corporate investors because of the high level of liquidity and low level of risk they carry.

Commercial paper is a short-term debt issued by finance companies and some other corporations. Interest rates for commercial paper are generally higher than for Treasury bills because of the risk factors involved in private firms. Many companies use commercial paper to supplement bank loans. In general, it is a less expensive method of financing for prime quality obligators than loans (because banks are not used as intermediaries) and may fill a need at a time when the issuance of long-term debt is not appropriate. The issuance of commercial paper lacks the supportive, interactive nature of a relationship between a corporation and a commercial bank.

Commercial paper may be sold directly by the issuing corporation or through a dealer. Since dealers screen the instruments to a certain extent, commercial paper placed by a dealer may be less risky for an investor, although commercial paper directly placed by some major corporations is of very high quality. The investor holds an unsecured short-term promissory note as evidence of the debt, and the instrument is tradable in money markets.

Commercial paper is designed to avoid a requirement of registration with the SEC. Because of past problems in commercial paper markets—specifically, those generated by the bankruptcy of Penn Central—investors have caused the market to become quite conservative. Commercial paper of companies that do not have a very high financial reputation is rarely marketable.

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[9] "Investing in Convertible Bonds," *Business Week,* June 20, 1983, p. 191.

[10] Roland I. Robinson and Dwayne Wrightsman, *Financial Markets: The Accumulation and Allocation of Wealth* (New York: McGraw-Hill, Inc. 1974), p. 147.

Bankers' acceptances, which originated at about the same time as international trading, continue to play a significant role in importing and exporting. A banker's acceptance is issued by a corporation and guaranteed by a commercial bank. The acceptance is a liability of the bank and is traded in money markets based on the reputation and credit standing of the bank. The instruments are of value in international trade, owing to the timelags that can occur because of the physical aspects of transporting goods and because of the uncertainty with which many traders approach foreign markets.

Certificates of deposit are negotiable securities issued by commercial banks. They have fixed maturities and pay interest to maturity. Yields on certificates of deposit are higher than for Treasury bills and are paid at the time the certificate matures. The risk associated is dependent on the quality of the issuing bank. Certificates can be traded in a secondary market before maturity; this market is particularly active for the certificates of deposit issued by major commercial banks.

Repurchase agreements stipulate that the short-term securities sold will be repurchased by the seller. They are frequently issued by bond dealers to finance inventories. U.S. Government securities are the usual basis for the agreement through which an investor "purchases" the securities while agreeing to resell them at a specified time and price. The term of repurchase agreements may be for several months or for overnight, and therefore has the potential to offer a great deal of flexibility.

Major questions involving repurchase agreements center on the level of risk involved and how the transaction should be classified. Historically, repurchase agreements were considered extremely safe transactions, although they are not federally insured, because they involve Government securities and are handled by recognized players in the financial service industry. However, recent collapses of dealers caused some investors to experience high losses.

The qualification of repurchase agreements as a sale or debt has created some controversy throughout the financial service industry. The Internal Revenue Service has held that it is a collateralized debt, and therefore the investor would be liable for interest income received. Dealers in Government securities sales disagree and consider the instrument to be a purchase/sale agreement. Congressional action is expected to confirm this stance.[11]

The short-term debt market has been greatly affected by the use of information technology. The nature of some short-term debt includes a definite end-date for the instruments. Improvements in sorting and transacting brought about by computer capabilities may extend the effective lifecycle of the instrument since it can be marketed more quickly. The availability of better data and the improved ability to analyze information about the debt instrument and about the issuing organization may affect the market for short-term debt instruments. The potential of short-term debt instruments as investment tools may be expected to improve to the extent that the application of technology will refine this evaluative process.

Information technology may also improve the packaging of short-term debt instruments by allowing securities industry marketers to match better the characteristics of various instruments to the demands of investors. The proliferation of money market mutual funds and demand accounts may be a result of this opportunity.

Options and Futures Contracts

The capital market investor's investment goals may not be completely met by debt and equity issues. The desire of investors to increase their liquidity or return or to limit risk has led to the development of instruments that comprise what may be considered a second-tier securities market. These securities are based on the fortunes and fluctuations of capital markets, but are not essential to the capital structure of individual firms.

Off-shoot investment products include options on stocks and bonds and futures contracts on commodities, currencies, and market indices. These instruments are all based on the market behavior of underlying products or securities. The interest of the investor is focused on the price fluctuations of the product, usually in a relatively short time frame, rather than on the intrinsic operations of the firm. Interest in options and futures contracts investment has led to the development of an industry structure specializing in these products, including exchanges and clearing corporations. The development of this structure has increased interest in the products and has led to further growth in option and future contracts trading.

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[11] "The Repo Market Is Still in Shock," *Business Week*, Apr. 4, 1983, p. 74.

Options

Options provide a method of participating in a securities market without ownership of actual debt or equity instruments. An option is a tradable instrument that grants an investor the right to buy (a *call* option) or the right to sell (a *put* option) a specific security at a given price for a limited amount of time. It is a legal contract in which two factors are explicitly stated: the expiration date and the exercise price. The value of an option is directly related to the market price of the underlying security. The exercise price of an option indicates the change anticipated in the market. The exercise price of a call option (at which the investor can buy the underlying security) is, at the time the option is issued, generally higher than the market price of the security. Conversely, the exercise price of a put option, which entitles the holder to sell the security, is generally lower than the market price. Options may be written and sold for real estate, debt instruments, and foreign currencies; they have recently become most significant in equity markets.

Options are "wasting assets"; that is, after the specified expiration date, they have no value. Therefore, the timing of market changes, as well as direction, must be correctly evaluated by the investor to assure that the potential value of the investment is realized. The writer of an option, except for warrants, which are discussed below, is not controlled by the organization named in the underlying security. More shares of stock may be represented collectively through outstanding options than have been issued by the corporation. While option writing and buying may be part of a complex investment portfolio that includes debt and equity instruments of an institution, the operations of option markets are, in a practical sense at least, totally separate from the capital structure of a corporation.

While options have been traded among individuals for many years, the market has grown and become more sophisticated since the organization of regulated exchanges in the mid-1970's. The trading of options entails a relatively new market structure; therefore, the influence of information technology on this structure is quite visible. For example, options use book entry rather than certificates as proof of ownership.

PARTICIPATING IN THE OPTIONS MARKET

Participants in options markets attempt to profit from their knowledge of the potential declines and rises of a corporation but have no direct stake in its operations. In the basic options market, players may be involved in four activities: buying call options, buying put options, writing call options, or writing put options.

An option buyer hopes to profit from or protect himself from a change in the price of the underlying security. The holder of a call option has the right to buy a security at a specified price. This investor may do three things with this right: exercise it by buying the underlying securities, sell it to another investor, or let it expire. He has no legal obligation to make any transaction of the underlying security. Further action on his part involving the contract is self-motivated and will result only from his evaluation of the market.

The writer, on the other hand, is obligated to buy or sell the underlying security under the conditions specified in the contract. His continued involvement with the instrument is not voluntary and, while in some cases may not be required, is legally enforceable. Both writers and buyers of options can liquidate their positions by purchasing offsetting options before the expiration or exercise of the option.

The motivation of an investor to buy a call option may be related to two separate strategies. He may hope to participate in the benefits of a rise in stock prices with a limited current investment and therefore may buy call options to achieve leverage or establish a future price at which he plans to purchase the security. He may also be motivated to purchase call options to limit risk, either as part of a conservative overall investment strategy or to hedge a short stock position.

For the individual investor, leverage may be measured through the percentage of total assets necessary to invest for a given rate of return. It is assumed that the financial assets of an individual are finite and that each investment decision is evaluated by its opportunity cost. Achieving leverage could be the motivation for buying call options for an investor who expected the price of an issue to rise. The cost of buying a call option for a given number of shares of stock represents a much smaller investment than does the purchase of the shares. A higher percentage of return on investment may result in the case of a rise in the price of the stock to the holder of a call option. However, it must be recognized that with a highly leveraged investment, a larger share of the investment may be lost. Since options are wasting assets, the investor must be correct in his evaluation of the timing as well as the likelihood of a price increase in order to profit from his purchase of options. If the option expires without being exercised, the investor's loss would be equal to his investment. Absolute return or loss will usually be lower for the option investor than if he held the equivalent number of shares of stock.

Options are also bought by investors who would like to invest in the underlying security and expect its price to rise but who do not have the cash to make the investment. The call option establishes a guaranteed maximum price for the security. This strategy is particularly useful if the investor anticipates receiving a flow of cash before the expiration of the option. If the price of the stock falls below the exercise price, the investor may purchase the security at the market price and consider the option a sunk cost.

While investment in options increases the leverage and establishes the price of future stock for the investor, the lower dollar investment required to buy call options rather than stock limits absolute risk, since the investor exposes less of his assets to the market. A common, conservative investment strategy is to purchase call options and invest the difference between the options and the price of the underlying security in a low-risk instrument, such as Treasury bills. Any loss incurred through the options investment would be at least partially off-set by the interest earned on the investment of the remainder.

Decreasing risk may also motivate an investor to purchase call options if he maintains an extremely risky position in equity markets by selling short, that is, selling securities he does not own in anticipation of a price decline. This investor theoretically exposes himself to unlimited loss if the price of the stock increases because he would be forced to pay market prices to deliver the securities. By buying call options, the investor who takes a short position establishes his maximum purchase price for the securities he is selling and therefore insures himself against limitless loss. Of course, if the market behaves in the manner anticipated by the short seller, the price of the option is lost profit.

While the buyer of call options generally acts in anticipation of increases in the price of the underlying security, the buyer of put options attempts to profit from or limit risk if the price declines. The option grants the holder the right to sell at an established price, and therefore it can be used for leverage and for limiting risk. As with call options, the investor must have correctly analyzed the direction of the price change and the timing of the change in order to profit.

The conservative investor can use put options as a hedge against a substantial decline in the price of a stock he holds. This strategy may be particularly attractive as protection for an individual who has a significant portion of his assets invested in a single security. However, it must be recognized that the insurance provided only lasts through the life of the option and that the cost of the option cuts into the investor's potential profits.

The writer of an option exposes himself to far greater risk than the buyer does. A writer of call options may be required to sell the underlying security to a holder at the exercise price at any time during the life of the option. Conversely, the writer of a put option may be required to buy the underlying security from the holder at any time during the contract.

The writer of call options is motivated by the possibility of gaining a return through premium income. Calls may be covered, wherein the writer owns the specified underlying security, or uncovered, wherein the writer would be required to purchase the security at market cost if he is assigned an exercise. Leverage for an investment portfolio may be the most significant motivating factor for the writer of covered calls. Return from the underlying security may be realized both through dividends or interest paid and through income received from premiums. While the covered call writer may hope to maintain his position in the underlying security, option writing may greatly increase his income-producing potential.

The writer of uncovered calls is the player at most risk in the options market. His potential loss may equal the market price of the stock less the sum of the exercise price and premium received for the option and, in theory, is limitless. The uncovered call writer must be extremely sensitive to any factors in the economy at large or for the corporation that may cause a significant price increase.

A writer of put options is obligated to buy the specified underlying security at the exercise price at any time until the option expires. The put writer must have sufficient liquid assets to buy the security and, as an exercise is only likely when the exercise price is higher than the market price, he must anticipate paying more than the value of the security. The option writer who trades through an exchange is required to deposit cash or securities, referred to as margin, with a brokerage firm. Puts may, alternatively, be secured with cash equal to the option exercise price. No additional margin requirements will be required in this case and interest may be earned by the writer on the cash deposited.

Investors are usually motivated to write puts by a desire to earn income from premiums, the price paid by the buyer of an option to the writer of that option. The opportunity to purchase the specified securities may also be a motivating factor in some cases. In a stable or rising market, it is possible to earn premium income with relatively low risk; however, demand for put options may be expected to be fairly low in this circumstance. Some put writers hope to acquire the stock at a net cost which, considering premium income, is less than the current value of the stock.

The four possible ways of participating in the options market may be combined by an investor to form a strategy he believes is most likely to meet his investment goals of producing income or limiting risk. The options tactics chosen are influenced by the investor's expectations about how the price of the underlying security is likely to change in direction and magnitude.

Spreads and straddles are the two most common multiple-options investment strategies. Spreads are used to limit risk in option transactions and involve writing and buying the same type of option, calls or puts, for the same specified security. The options generally have different expiration dates or exercise prices. If the investor were assigned an exercise for the option he wrote, the spread benefits would disappear, and his risk position would be drastically changed. The writer of spreads generally anticipates little change in the price of the underlying security. A stable market provides his best opportunity for profit.

The investor who anticipates a great change in the price of an underlying security but is unsure of the direction or magnitude may maintain a straddle position. The straddler either writes or buys both a call and a put option for the same security. Both the call and the put should have the same exercise prices and expiration dates. Buying straddles has limited risk because maximum loss equals the premium price and, theoretically, unlimited profit potential. However, the price change must be significant in order for the investor to profit, and the investor must be correct in his evaluation of the timing of the change. Straddle writers are generally motivated by their belief that there will be little, if any, change in the price of the security and, therefore, that if an exercise were assigned, profit from premium income would insure a net profit after costs of satisfying the exercise conditions. Risk for straddle writers is limitless, as a substantial loss can be incurred on both positions if the market price for the security fluctuates more than expected.

PRICING OF OPTIONS

The premium (i.e., price) of an option is subject to change and is influenced by characteristics of the option, the underlying security, and general economic conditions. Factors influencing the premium include the expiration date of the actual instrument, the price and volatility of the underlying security, supply and demand effects on the option market for the specific security, and on the whole as well, interest rates. The premium for an option is comprised of intrinsic value and time value. An option has intrinsic value any time the difference between the exercise price of the option and the market price of the security works to the advantage of the holder. Anytime this is not the case, the option has no intrinsic value, and the premium is based only on time value.

Time value represents an evaluation by an investor of the potential of the option to increase in value owing to a change in the price of the underlying security prior to expiration of the option. Time value may generally be expected to decline as the expiration date approaches and as the possibility of fluctuation in the security price decreases. It is also influenced by the amount of difference between the exercise price and the market price of the underlying security. A large difference may result in a decrease in time value because the possibility of profitably exercising or selling of the option is more remote. Increasing interest rates generally result in increases in time value.

Warrants

A warrant is unique because it is issued by the corporation that issues the underlying security and, as such, is part of the capital structure of the firm. A warrant is a type of call option that grants the holder the right to purchase company stock at a stated price, usually somewhat above market at the time of issue. The value of the warrant itself at any time is dependent on the current price of the stock of the issuing corporation. Warrants are often offered with debt issues by corporations to make the debt issues more attractive to potential investors. They offer a participation right of sorts if the corporation grows. The investor benefits from the fixed return of the debt investment as well as the opportunity to purchase stock at an established price.

As with all options, an exercise price is specified for the warrant. It may have a specific expiration date or be perpetual. The contract also specifies whether it can be traded, as with other option instruments, or be exercised only by the holder.

Unlike other options, warrants directly affect the capital structure of a corporation. A call or put option is exercised through a capital market and with no net change in the number of shares outstanding for the corporation. However, when a warrant is exercised, the corporation issues new shares of stock; therefore, the earnings of the company, from the point of view of the shareholders, are diluted. This situation complicates valuation both of the stock of the corporation and of the warrant.

THE EFFECT OF INFORMATION TECHNOLOGY ON OPTIONS

Information technology is likely to continue to facilitate the development and trading of options. Because option markets have only recently become highly structured and have been heavily dependent on technology from their inception, the continuing application of communications and computer technologies in these markets is not likely to lead to major revisions in ways of doing business to the same extent as they have in debt and equity markets. Options may serve as a testing ground of sorts for new technologies, and technology use in this area may presage future applications throughout the securities industry.

The use of personal computers and sophisticated communications technologies may spur the development and marketing of option contracts by individuals and may lessen the role of brokers in bringing writers and buyers together. Information technology should also facilitate the monitoring of option markets by investors, brokers, corporations issuing securities on which options are written, and market observers and regulators. This may become increasingly important as the use of options as an investment instrument grows.

Futures

Futures, or future contracts, are legally binding agreements that call for the purchase or sale of real or hypothetical items at a stated price at some time in the future. Future contracts can be developed for anything and are traded on established exchanges for physical commodities such as pork bellies and coffee, for financial instruments, and for hypothetical stock portfolios.

Even though future markets at one time were focused only on commodities; they have expanded greatly. In the past, communities needed to be self-sufficient in their production of foodstuffs and other necessary goods because transportation between regions was not efficient. As lack of transportation became less of a barrier to trade, commodities markets developed that allowed for specialization in production and made a wider assortment of goods available. Centralized commodity markets made more extensive trading possible, and future markets grew from them to address price-change risks.

Commodity futures markets developed because of the need in both agricultural and industrial societies to minimize the potential impact of unknown and hard-to-predict forces that influence the price and availability of resources and products. For example, through the use of futures contracts, food processors are able to set definite maximum prices for the commodities they will need for production throughout the entire year. Most crops are only harvestable for a very short period of time in any year, and it is desirable for farmers to be able to sell all of the harvest at that time to avoid the need for expensive storage. While the demand for some food products, such as turkey and pumpkins, may be seasonal, food processors face a year-round demand for products made from commodities only available for a very short time. These processors need to have the commodity available at a predictable price when it is needed. By providing a reliable means to conduct future buying and selling, futures markets have served to equalize the marketing of most seasonal farm crops.[12]

The development of futures markets centered around the desire to transfer risk. The play of the market attracts a large quantity of risk capital through which changes in commodity price levels can be absorbed with only a minimum direct impact on producers and processors of commodities.

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[12] Future Industry Association, "Development of Commodity Exchanges," *Futures Trading Course and Handbook*, Washington, D.C.: 1983, p. I-4.

This allows the producers and processors to operate at lower cost than would be possible if they had to bear the entire risk of market fluctuations. In turn, this lowers prices to the public.[13]

Commodity futures markets help effect stability in consumer prices. Because food processors can bound their costs, consumers are assured that products will be available when needed at a relatively predictable price and therefore approach the market in rational manner. This price stability is both of importance to the general economy of the Nation and of social interest, since allocations through Government programs, such as food stamps, can be set with some certainty as to what market conditions will be for the recipients.

THE OPERATIONS OF FUTURES

The taking of a position in future contracts for a product on which one depends in one's primary economic activity is called hedging. For example, General Foods might be expected to hold a position in coffee futures contracts to guarantee the maximum price it would need to pay for beans for future production. In the discussion of futures, hedging is not a speculative strategy but rather refers only to the activities of players who face risk because of possible fluctuations in price and availability of an actual commodity.

STOCK FUTURES

Options, which were discussed in an earlier section, allow for the transfer of risk associated with a particular debt or equity issue. Broad changes in the stock market prices pose a blanket risk to highly diversified investors, and stock futures may offer inherent price change protection to these investors. Stock futures are contracts that call for the buying or selling of a mythical basket of stocks, usually a grouping which is used in an index of market behavior. Due to practical limitations, these futures are settled through cash rather than the actual purchase or sale of the underlying securities.

The availability of stock futures through which an investor can hedge against swings that affect the entire stock market may add a great deal of stability to that market and is expected to be of great significance to institutional investors, who hold a growing proportion of all shares. Investors may be more judicious in their response to market changes because their risk may be minimized by the holding of offsetting positions in stock futures, and therefore the stock market may become less volatile.

If the stock market becomes less volatile, it must be expected that funds currently held in mutual funds or the savings instruments of depository institutions because of the desire of the investor for stability will be transferred to direct participation in capital markets. More money may be available for corporate capital formation; however, this may be at the expense of the banking structure.

Questions that must be addressed are: what happens to the risk that is transferred away from the stock market? and what effect will this transfer have on the market? The result may be that the assumers of risk, in this case players in stock futures, may be expected to be advised better and more able to accept this position.

One cannot blindly accept that risk was bad for the stock market when, in fact, it was the market's reason for being. It is essential that some means of projecting what the impact of the possible end of the need for a risk-accepting role by stock exchanges will mean to the process of capital formation be available. It is also necessary to determine what, if any, effect the activities of markets in stock futures will have on the inherent soundness of capital markets. Stock futures may cushion the stock market from changes in the general economy; however, it is not clear what impact a catastrophic event in the futures market might have on the entire capital formation process.

THE EFFECT OF INFORMATION TECHNOLOGY ON FUTURES

Futures markets provide a glimpse of what the possible impacts of information technology on the securities industry as a whole may be. The potential of information technology was available as many of the operations of this segment of the industry were developed.

Modern futures markets need both man and machine to operate. Human decisionmaking has been and will continue to be the one irreplaceable and essential characteristic of any successful market. However, the volume of trading demanded by current market conditions requires a level of operations not feasible for mortals in a free society at an acceptable cost. It would be impossible to operate futures markets with the precision and at the volume demanded by the market without the application of information technology; for example, for performing simple tasks, such as sorting faster, that would be impossible for a human work force.

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[13] Ibid.

Computer and communications technology did generate a futures market; however, if these technologies were not available, the market could not have grown to its current size and importance. Its absence would have effectively foreclosed the possibility of responding to the demands of the economy for the level and quality of operations now seen.

Mutual Funds

The importance of mutual funds as institutional investors is discussed earlier in this report; however, these funds also have a role in the securities industry in the role of investment instruments.

Mutual funds offer investors a way of participating in securities markets without directly purchasing capital or money market securities. An investor may be attracted to a mutual fund as a sort of proxy method of participating in the securities market. The individual benefits from the expertise of the fund management, and risk is generally lower than that through direct participation, although actual risk differs significantly, based on the investment strategy of the fund. Mutual funds allow investors greater liquidity than capital markets; shares are redeemable at any time at current asset value less applicable redemption fees.

Mutual funds have traditionally been especially important for the small investor because they can frequently be entered with a smaller amount of investment capital than can the securities market, as the money invested is pooled with that from other participants. The investor may also take advantage of the possible benefits of a diversified portfolio that he might not have been able to support by directly participating in capital or money markets. For the investor interested in an entire industry rather than a specific company, certain funds allow such a focusing of investments.

Mutual funds that are made up of corporate bonds and stocks are significant to the formation of capital because they attract investment money to the market that would not otherwise have been available. While some mutual funds centered on capital markets have charged high transaction fees (called a load), their availability has increased both consumer options and competition for investment dollars throughout the financial service industry. The application of information technology to the development and marketing of mutual funds should increase the number and variety of funds available to consumers.

Moneymarket mutual funds are one of the more liquid instruments available to investors. The liquidity of this type of investment is demonstrated by the fact that, in many cases, shareholders may access their funds by writing drafts, as quickly as a bank checking account by requesting wire transfers, or in some cases, by using an automated teller machine (ATM).

Such funds invest in short-term money market securities and, because of the nature of the underlying securities, are extremely liquid and relatively risk-free. Money market mutual funds are a valuable cash management instrument for businesses and an extremely valuable tool for individual investors, both the "small" and the more affluent.

Money market mutual funds give investors access to money market securities on terms that they could not likely match themselves. Economies found in issuing and servicing large-denomination money market securities result in higher yields than those offered on similar securities of smaller denomination.[14] The holder of shares in a money market mutual fund benefits from this higher rate of return.

Money market mutual funds have enjoyed major market success. While information technology is not directly responsible for this, many industry experts believe that it would not have been possible, from an operational or business point of view, to introduce this type of fund without the support of communication and computer technologies. Information technology makes it possible to retain the highly liquid character of the funds by simplifying access for the investor. The level of trading in short-term securities required by the funds would be difficult to complete physically without the assistance of information technology.

The number and variety of capital and money market mutual funds will probably continue to grow. While this growth will provide more options for investors, it may also have an impact on the way in which securities markets operate. Although information on the investments of the fund is included in prospectuses and periodic reports to shareholders, it is not clear that the individuals investing in the fund take an active interest in what instruments their money is invested in. While the pool effectively lowers risk, the responsiveness of individual shareholders is markedly lower than would be expected in normal market circumstances. The institutional investor behaves differently, for better or worse, because he makes decisions differently, and this may have an impact on securities markets.

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[14] William Jackson, "Money Market Mutual Funds," Congressional Research Service Issue Brief No. 81057, Jan. 20, 1983.

Central Asset Accounts

The central asset account is considered by many to be the single most important investment product of the next decade.[15] In developing the market-leading Cash Management Account, Merrill Lynch recognized that the financial needs of a single customer are interrelated and form well-defined types of systems.[16] The central asset account attempts to meet an investor's full range of financial needs with three basic components: the securities margin account, the money market fund account, and a zero-balance bank loan account that can be accessed by check or card. A central asset account provides a full range of financial services to its user. The accounts offer a centralized method of controlling assets and, as free credit balances in the zero-balance account are "swept" into a money market fund, both liquidity and return are maximized for the investor.

Nearly all major securities firms offer a central asset account. While they have the same basic components, their features often differ. Among the features that distinguish accounts are: how frequently "sweeps" of free credit balances occur, whether a charge or debit card is issued for access, the offering of excess insurance coverage; whether the account is accessible through an ATM network, and the availability of a bank overdraft line of credit.[17] The accounts have been targeted toward the upscale market, an estimated 10 to 12 percent of the population. A substantial minimum opening deposit of securities or cash, usually of between $15,000 and $20,000, is required and an annual fee is charged.

Merrill Lynch first offered the Cash Management Account in 1977 and as market leader now has nearly 1 million accounts. The market growth that central asset accounts experienced may have been attributable in part to market conditions, especially high interest rates. As conditions have changed, the growth of these accounts has declined.[18] The significance of the account in the long run is difficult to judge, although it seems likely that it will continue to serve the needs of a segment of the market. One important feature of a central asset account is that it allows brokers to fill more of their customers' financial needs for more of their personal financial lifecycle.[19] This makes the account a valuable tool for financial service offerers, as it may help to attract and retain customers.

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[15] *The Financial Services Industry of Tomorrow*, a report prepared by the Committee to Examine the Future Structure of the Securities Industry, National Association of Securities Dealers, November 1982, p. 20.

[16] Herbert M. Allison, Jr., "The Perspective of a Diversified Financial Services Company," panel presentation at the Eighth Annual Conference of the Federal Home Loan Bank of San Francisco, *Strategic Planning for Economic and Technological Change in the Financial Services Industry*, San Francisco, Calif., Dec. 9-10, 1982, p. 157.

[17] Joseph Diamond, "Central Asset Accounts Developed by the Securities Industries," *Financial Services Institute Handbook*, vol. 1, p. 358; prepared for distribution at the Practicing Law Institute Financial Services Institute Program, Feb. 14-15, 1983.

[18] Alice Arvan, "Asset Accounts Reach Out for Broader Markets," *American Banker*, May 20, 1983, p. 9.

[19] William L. White, "The Outlook for Money Market Mutual Funds," a report to the Investment Company Institute, Sept. 30, 1982, p. 62.

Appendix 3B: Capital Formation and the Functions of the Securities Industry

The securities industry performs its functions of advising, underwriting, and marketing to gather capital by bringing investors and organizations in need of capital together in two ways: through private sources and through public offerings. Financial advisors may assist the firm in determining which path to follow. The characteristics of the firm, its size, management style, and financial history, as well as the amount of capital needed and market conditions, all contribute to the decision on whether to attempt to finance through private or public offerings. An overview of the role the securities industry plays in both private and public financing is provided below.

Private Sources of Funds

Seeking capital through private sources may offer salient advantages for many corporations. Regulatory requirements associated with public issues are avoided. This may save time and, more importantly, the avoidance of disclosure requirements may be an advantage for many firms, particularly those in highly competitive industries. However, because the firm is only likely to approach a limited number of investors and because the assurances associated with a regulated public offering may not be found in private financing, the firm may find it necessary to pay a higher rate of interest or return on money obtained and may find that the creditor or holder of equity has a greater interest in the operations of the firm than investors in public issues.

Private Placements

A corporation may sell an entire issue of securities directly to a single investor or small group of investors. Such an action is referred to as a private or direct placement and may involve either debt or equity issues, although more commonly, debt instruments are involved. Private placement offers several advantages over a public offering for the issuing firm. It is generally quicker and cheaper, as registration of the issue with the SEC is not needed, and the firm deals either directly with the potential investor through a placement agent. The issue may also be more directly tailored both to the needs of the borrower and the investor in the terms outlined and in the timing of the issue.

A potential disadvantage of this type of offering may be mitigated by the application of information technology; that is, the location of suitable potential investors in a time frame that allows the capital seeker to plan the use of the funds with some precision. Communications technologies may streamline brokerage private offerings.

Privileged Subscription Basis

An offering of stock only to existing stockholders is termed a privileged subscription, or rights, offering. In many cases equity holders are granted a preemptive right in the articles of incorporation of the company that requires the firm to give current shareholders the opportunity to maintain their "position," that is, percent share of total ownership, any time a new issue is made. In this situation each shareholder is issued one right for each share of stock owned. The number of rights needed to purchase new shares are specified in the offering; however, the shareholder is assured that he will be able to purchase new shares in proportion to his current stake.

A privileged subscription may provide basic marketing advantages to the issuing corporation and therefore to the shareholders, even those who opt not to purchase additional shares. The targeted market for the offering is known to have an interest. Assumed knowledge of the corporation and the costs associated with the offering are usually lower than they would be for an offering to the general public. Often, floatation costs are half those of a public issue. From the point of view of the investor, margin requirements for a purchase through a rights offering are generally lower than in other circumstances.

The corporation may identify two major disadvantages with a rights offering. First, to attract investors, the price per share may have to be lower than would be assigned in a public issue. As a lower total amount of capital may be raised by the issue, earnings per share may be diluted. Second, the increased number of actual shareholders resulting from a public offering may be desirable for the corporation. The greater the number of stockholders, the more likely that management will retain control of the operations of the company.

Venture Capital

Venture capital is money invested in new or small businesses by corporations or individuals that are not directly involved in the management of the business, although they may provide advice. The investor is usually granted a large enough share of equity in the venture to exercise significant control of the corporation and, in cases where the venture is successful, to receive a significant return. The equity is frequently issued in the form of letter stock, a private placement that cannot be resold until the issue is registered with the SEC, which may be years later.

Although it may be an extremely risky investment, individuals who are venture capitalists are attracted for several reasons. Not only is the rate of return significantly higher, but as it is in the form of capital gains rather than dividends, it is taxed at a lower rate. Organizations that provide venture capital are part of many corporate families, not only because of their primary goal of financial returns but also because of other tangible business benefits the venture capital relationship can provide. Several investment banks have formed

Table 3A-1.—Most Active Venture Capitalists, 1982

Rank	Name of firm	1982 total investment (in millions)	1981 rank
1.	The Hillman Co.	101.5	1
2.	Allstate Insurance Co. Venture Capital Division	64.2	9
3.	First Chicago Investment Corp.	48.5	2
4.	General Electric Venture Capital Corp. (G.E. Corp.)	41.6	27
5.	Brentwood Associates	35	10
6.	E. M. Warburg Pincus & Co.	33.9	12
7.	TA Associates (Tucker Anthony & R. L. Day)	32.3	4
8.	Security Pacific Capital Corp.	32.25	8
9.	Citicorp Venture Capital Ltd.	30.5	3
10.	BT Capital Corp. (Bankers Trust N.Y.)	26	45

SOURCE: *Venture*, June 1983.

venture capital units in the hope of handling eventual public issues if the company experiences hoped-for growth. The desire to attract and retain customers is an incentive also for commercial banks and insurance companies.

Some major corporations, particularly in the energy and electronics fields, have formed venture capital units because of interest in financial return and the hope of gaining access to new ideas and technology that may be beneficial to the corporation. The need of established industrial giants to maintain the pace of technological innovation may encourage further entry into the venture capital market.

For a small or new corporation, venture capitalists may provide a valuable source of financing. Intermediaries in the securities industry provide assistance to this capital seeker. They help locate a potential investor whose objectives are in line with those of the organization in need of financing and assure that the financial arrangement developed is in the best interests of the firm in both the long and short runs.

Venture capital has become more plentiful in the past several years. Industry experts attribute this to changes in Federal Government policies that reduced capital gains tax in 1978 and 1981 and relaxed pension trust fund investment rules in 1979.[1] Information technology may have an impact on venture capital financing because it may facilitate analysis of possible deals. New communication capabilities may also make it easier for prospective venture capitalists and the seekers of financing to locate one another.

An important source of venture capital for small businesses are *Small Business Investment Corporations* (SBICs). These firms are licensed and regulated by the Small Business Administration under a program established by the Small Business Investment Act of 1958 to contribute to the development of small businesses. SBICs are privately owned and operated investment firms, but are eligible to receive some Federal funding. Capital is developed in the form of equity or long-term loans.

These firms are an important part of the capital formation process for small businesses that might be at a disadvantage in competing for venture capital. Information technology may be expected to facilitate the development of financing between SBICs and businesses by making it easier for both to identify potential investment arrangements.

Public Offerings of Securities of a Corporation

The decision by the management of a privately held corporation to "go public" is based on their objectives and strategies for the future of that business. The desire to acquire capital, to increase the liquidity of the original owners, and to strengthen the balance sheet of the corporation must be weighed against the expense involved in such a move, the increased vulnerability of the corporation to general market conditions, and the necessity that management take on additional responsibility for the actions of the corporation and, possibly, relinquish control of it.

There is no strict formula through which the decision to go public can be made. Going public may involve a significant change in the structure and operation of a firm, and this change must be assessed in terms of the objectives of the owners and management of the company. The decision cannot be assessed individually; it must be considered in light of other alternatives such as private funding or additional investment by the owners. In evaluating the option of going public, several matters must be considered; these include business, accounting, legal, and regulatory considerations.

Careful attention must be paid to the planning of an offering to assure that the normal operation of the firm is not disrupted and that maximum value is derived from the offering. Major factors to be considered by the corporation include timing of the issue, both in terms of the operations of the company and of investment markets; the ability of the firm to attract an underwriter, if needed; and the ability and desire of the corporation to adhere to disclosure requirements. Information technology may ease these problems by aiding in the analysis of decision factors and possibly by shortening the issue process and therefore the disruption of business.

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[1] U.S. General Accounting Office, *Government-Industry Cooperation Can Enhance The Venture Capital Process*, Report to Senator Lloyd Bentsen, Joint Economic Committee, Aug. 12, 1982, p. 4.

Federal laws governing public offerings by corporations or organizations require the disclosure of information on which investment decisions can be based. A prospectus is information provided to potential investors in a new securities issue that describes the current condition and history of the issuing firm. It attempts to provide information on which a decision to invest can be made but does not contain any type of objective judgment on the advisability of investing in the described issue.

Information technology may affect public offerings by corporations in several ways. First, the essential requirement of Federal securities laws is the provision of information to potential investors. It is quite likely that the application of information technology for disseminating information will radically change the physical activity of going public. Paper was the logical medium through which information could be transmitted in the 1930's, when many of the currently applicable securities laws were enacted.[2] It was cheaper and more reliable than the communications technologies of the day, notably telephone and radio, and was easier to use.

Paper was never intended to be a sacred medium for conveying information about securities offerings. Its use was specified because it was the most practical choice. The vast improvement in quality and cost of information technology has turned the table on the comparative effectiveness of paper and communications media. Recognition of this change is causing a reexamination of the process of filing new offerings with the SEC.

The SEC is trying to make the volumes of information it receives easier to manage and use by applying information technology to its information gathering and dissemination process. Some experts advocate the eventual movement toward paperless filing and information dissemination. Potentially, a system based on information technology could result in faster dissemination of information and more efficient review and storage processes.

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[2] Lee B. Spencer, Jr., "The Electric Library," Remarks to the American Bar Association, Federal Regulation of Securities Committee, Nov. 19, 1982.

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Chapter 4

Retail Financial Services

Introduction

The retail financial service industry consists of those organizations (e.g., banks, credit unions, insurance companies, consumer finance companies) that deliver products to end-users.* Consumers comprise the largest and most visible single group of end-users of financial services, but business and government both have roles as customers for retail financial services. Included among retail financial products are depository accounts, extensions of credit, and payment services.**

According to 1982 figures, the industry encompasses more than 90,000 business entities, including 15,000 commercial banks, 4,000 savings and loan associations, 1,000 mutual savings banks, 22,000 credit unions, 1,000 investment banks, 5,000 broker/dealers, 1,000 mutual funds, 1,000 mortgage banks, 3,000 pension funds and pension fund managers (other than banks and insurers), 2,000 life and health insurance companies, 3,000 property and casualty insurance companies, and more than 33,000 insurance brokerage agencies, as well as numerous factoring companies,*** leasing companies, credit card or traveler's check issuers, and finance companies. In 1980, the financial service industry (excluding real estate) contributed $100.4 billion, or 5 percent, to the U.S. national income.[1]

Historically, deposit-taking has been viewed as a special activity in the economy, and depository institutions have been viewed as occupying a unique place in the industry. Depositors place a very high degree of trust in the institutions holding their funds. At the same time, because depository institutions play such an important role of intermediation between sources of funds and those having need of them, they are in a position to exert a measure of control over virtually all other economic activities.

Retail financial services, especially those offered by banks, have been heavily regulated by both State and Federal Governments. Rates paid on deposits have been largely deregulated, but limits on the rates charged on consumer loans remain in force. Depository institutions are generally limited to offering prescribed products to predefined markets. Banks, for example, are limited with regard to the geographic area served, while credit unions are limited to serving only groups whose members share a common bond, such as employment with a specific firm. Generally, bank holding companies are not permitted to enter lines of commerce not closely associated with banking. Depository institutions are examined to ensure that they are pursuing business in a manner consistent with preserving institutional safety and soundness, and many of their business decisions (e.g., effecting mergers, opening branches, offering new products) are reviewed by regulators prior to implementation.

Depository institutions enjoy some unique benefits in exchange for heavy regulations. Only they can take deposits and offer accounts that are federally insured. Depository institutions are unique in having access to the various systems used to transfer funds.

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*For the purposes of this assessment, wholesale financial services, as contrasted to retail, are those provided by one financial institution to another in a way that is largely invisible to the end-user.

**Customers of securities brokers are also users of retail financial services. However, because the security industry is governed by a body of policy unique to it that separates it from retail banking and other retail financial services, it is treated in ch. 3 of this report.

***Factoring is the process of selling accounts receivable to a third party, who then assumes the risk and costs of servicing them.

[1] State of New York, *Report of the Executive Advisory Commission on Insurance Industry Regulatory Reform*, May 6, 1982, p. 101.

Today, insurance companies, providers of services such as credit cards and traveler's checks, consumer finance companies, dry goods merchants, investment companies, and food retailers also provide retail financial services. Some, such as insurance companies, are regulated, while others, such as providers of traveler's checks, are virtually unregulated. All, to an ever-increasing degree, are broadening their range of business activities and, to some extent, are encroaching on areas previously served by others, including those heretofore exclusively reserved to depository institutions.

Information processing and telecommunication technologies have contributed to the broadening of product lines by providers of retail financial services. New entrants have been able to develop and offer products that compete directly with those previously available only from depository institutions. Distance and location have lost much of their significance as factors limiting the market served by a service provider. In addition, by using the technologies, new classes of products have been developed. Foremost among these are those that deliver financial services to remote locations, such as the home, office, merchant's counter and unstaffed branches. Others, such as services to facilitate collection and investment of cash, are directed to the business community.

As noted, law and regulation are significant forces shaping the financial service industry and guiding its day-to-day operations. The existing legal/regulatory structure dates largely from the 1930's and is built on the assumption that specific types of institutions will be the only ones offering each type of service. For example, transaction accounts are assumed to be offered only by banks; and thrift institutions are assumed to focus their lending activities on home mortgages. Thus, even though the intent was to regulate by function, the focus of legislation has been on the institutions rather than on the products they offer. As a result, the offering of new products by unregulated providers is often found to lie outside the existing legal/regulatory structure. New entrants who rely heavily on advanced technologies to implement their offerings generally fall outside the boundaries of existing regulation.

The financial service industry is becoming homogenized to a significant degree, and differentiation between products has become less apparent, particularly from the point of view of individual consumers. Commercial banks and savings and loan associations are now permitted to serve many of the same clientele. For example, recent legislation gave savings and loan associations the power to make some commercial loans, a product that could not previously be offered. While securities broker/dealers are not permitted to offer depository accounts, they do offer shares in money market funds that have properties very similar to deposits. Insurance companies offer universal life policies that share many properties with self-directed investment accounts offered by others.

VISA and MasterCard are the two principal bank card products offered nationwide. However, in addition to being offered by banks, these are now issued by such varied organizations as the American Automobile Association and various brokerage houses that offer them in conjunction with asset management accounts. Travel and entertainment cards can be used with automated teller machines (ATMs) to obtain either cash or traveler's checks. In some cases, a plastic card is used to access a depository account (e.g., checking). Plastic cards can also be used to draw on a line of credit either to pay for a purchase or to obtain a cash advance. The same card can be used for both purposes. However, the finance charges are assessed differently for the cash advance and the credit purchase.

One of the major developments of the 1980's has been the development and deployment of networks of ATMs. Some of these accept only the card of one institution, while others permit access to accounts held in any one of a number of institutions. Most of these networks are offered by depository institutions or consortia of depository institutions. However, retail dry goods merchants, supermarket chain operators, and operators of convenience stores are now establishing networks and offering financial institutions the opportunity to access them.

More generally, telecommunication has been a major factor in the development of financial products in the 1980's. Providing remote banking services has been a key area in the development of financial services. Publishing companies are combining with financial service providers and communication companies to deliver financial services directly to the homes of consumers. Grocery chains are establishing networks of ATMs that compete directly with those offered by banks. Banks offer cash management services to business, enabling corporate cash managers to control funds on deposit with institutions worldwide and to manage them to the best advantage of their employers.

Other developments of the 1980's have been the emergence of the financial supermarket and the specialized supplier of financial services. Several organizations have used differing strategies to develop into horizontally integrated suppliers of financial services. The remarkable point is that some find their roots in insurance, others in retailing, and yet others in banking. Under the existing legal/regulatory structure, all operate within differing constraints and therefore come to the market with varying strengths and weaknesses. Others, by way of contrast, seek to serve specific groups, such as members of the professions with products tailored to their particular needs. The market appears ready to support service providers across the full spectrum of possible product menus.

Fluidity in the structure of the financial service industry limits the utility of any description that focuses on the institutions that comprise it. A list of providers would almost certainly omit some and include others that arguably could have been omitted. Because product lines of various classes of providers of financial services are close substitutes for one another, descriptions of each of the classes of providers would become redundant.

Therefore, the approach taken to describing the retail financial service industry in this assessment is to focus on the functions performed for the customers and then to relate those functions by way of example to the organizations that provide them. The classes of functions described are treated under the headings:

- deposit/withdrawal function,
- extension of credit,
- electronic funds transfer, and
- financial information services.

Deposit Function

Technically, the function of accepting deposits is strictly limited to depository institutions. Simply defined, a deposit is a placement of cash, checks, or drafts with a financial institution for credit to a customer's account. Deposits become a liability to the financial institution since they represent an obligation to repay funds. The deposit function is the traditional banking process by which funds are accepted for credit to a demand, savings, or time account. Deposits are accounts for holding funds. The deposit is made by one of the following methods: in person, by mail or tape, or electronically via ATM or other remote terminal or by the Automated Clearing House (ACH).* In paper-based systems, access to deposits depends on the physical transfer of documents such as a check or draft.** However, electronic technologies have helped revolutionize this function.

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*The ACH is a computerized facility that helps clear funds transactions among participating institutions electronically.

**Draft—An order written on the funds of a third party to transfer the amount specified to the payee.

In essence, a deposit differs from an investment in that the depositor expects to be able to recover the amount deposited, often with some interest, with virtually no risk of loss. The depository institution holds itself ready to pay the amount of the deposit under conditions that are consistent with the contract under which it was taken. In the case of a demand deposit, for example, the depository institution stands ready to pay on demand. On the other hand, if the owner of a certificate of deposit withdraws the funds prior to maturity, a significant penalty is extracted that, in some cases, involves loss of principal as well as interest.

In the present environment, firms other than depository institutions offer products that are operationally similar to a deposit from the customer's point of view. For example, securities broker/dealers and investment companies offer shares in money market mutual funds that include the option of redemption by means of a draft written against the investor's holding. A whole-life insurance policy accumulates cash value that is available to the owner.

Some will tend to view these products as deposits because, operationally, the funds are available virtually on demand. The expectation is that payment will be made by the provider even though there may be contractual provisions that an order to pay need not be honored immediately. There may also be no guarantee that shares will be redeemed at the price originally paid by the investor. However, as long as institutions continue the practice of operating near-deposit products in a manner that closely approximates the operation of a true deposit account, the customers will see the former as being a close substitute for the latter.

In this environment, not all of those offering deposit or near-deposit products operate under the same set of rules. This variation introduces new elements into the calculus used by those responsible for the safety and soundness of the financial service industry and the formulation and execution of fiscal and monetary policy. In the sections that follow, the various types of deposit-like products and associated deposit-taking services are described.

Table 3 presents a comparison of the various depository instruments and accounts discussed in more detail below.

Direct Deposit

Direct deposit is most often used to effect payment from either private or public organizations to recipients of salaries, pensions, and entitlements. It is actually a preauthorized credit arrangement between the party issuing the payment and the receiver and is commonly

Table 3.—Comparison of Depository Instruments and Accounts

Instrument or type of account	Interest-bearing	Withdrawal notice request	Mandatory deposit period	Penalty for early withdrawal	Minimum deposit or balance
Check	No	No	No	No	No
Draft	Yes	Optional	No	No	No
Traveler's check	No	No	No	No	No
Conventional savings account	Yes	Optional	No	No	No
Credit union account	Yes	Optional	No	No	No
Certificate of deposit[a]	Yes	Yes	Yes	Yes	Yes
Money market deposit account	Yes	Optional	No	No	Yes
NOW acccount[b]	Yes	Optional	No	No	Optional
Super NOW account[b]	Yes	Optional	No	No	Yes
Savings bond	Yes	Yes	Yes	Yes	Yes
Savings certificate	Yes	N/A	Yes	N/A	Yes

[a] Effective Oct. 1, 1983, interest rate ceilings are eliminated on all time deposits with original maturity or required periods of more than 31 days, and on time deposits of $2,500 or more with original maturity or required notice periods of 7 to 31 days.

[b] Not available to commercial businesses.

N/A—Not applicable.

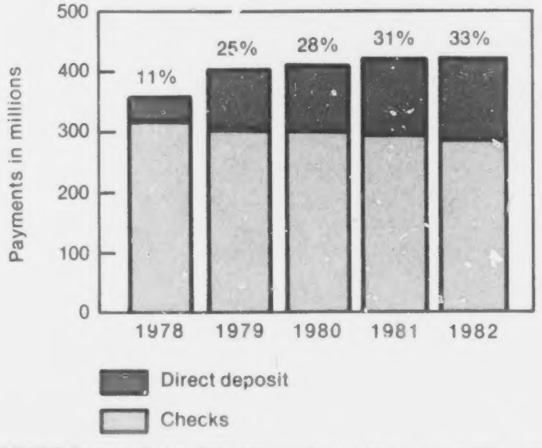
SOURCE: Office of Technology Assessment.

used for recurring payments. One of the largest users of direct deposit is the U.S. Department of the Treasury, for Social Security payments. It is also widely used for military payroll and other regular Government payments.

Figure 6 shows the increasing rate at which Social Security recipients have been willing to accept payment by direct deposit. In 1978, only 11 percent were willing to make use of direct deposit; but this proportion had grown to 33 percent by 1982. The Department of the Treasury hopes for further increases.

Direct deposit transactions started as paper transactions, but the rising volume of such payments has encouraged the use of the ACH network and systems, which depend heavily on the interchange of magnetic tape (see table 4). The process involves coding payment information in machine-readable form and moving it between banks on computer tapes or, in some cases, over telephone lines. The paying bank or organization consolidates all its payments for a certain date and submits them on magnetic tape through the ACH. The ACH then routes the payment information to each receiving bank. The tape can be sent in advance with the information predated. For example, stock dividend checks could be processed through the ACH for direct deposit. It is expected that use of the ACH will increase once a critical volume has been achieved by the flows to and from large organizations. As this occurs, users with smaller volumes of payments should gradually be absorbed into the system.

Figure 6.—Penetration of Direct Deposit Social Security Payments



SOURCE: *Economic Review*, Federal Reserve Bank of Atlanta, August 1983, p. 33.

Table 4.—Nationwide ACH Volume

Year	Private	Government (Social Security)
1976	4,283,770	46,646,999
1977	10,344,192	69,694,741
1978	18,612,263	93,207,073
1979	33,324,163	123,353,594
1980	63,362,597	144,112,204
1981	117,019,927	164,157,190
1982	174,613,862	176,821,896

SOURCE: National Clearing House Association

Point-of-Sale Systems

Point-of-sale (POS) systems, discussed in detail later in this chapter, also function as a deposit-taking method. In some cases, retail clerks will accept funds for deposit to customers' accounts. In others, the financial institution will operate a station or counter in the retail store at which deposits are accepted. A third alternative is the placement of an ATM at the retail store location. The ultimate goal of POS implementation in the financial service industry is to institute an electronic process through which transactions may be instantaneously debited/credited.

Lockbox Operations

In lockbox operations, payments go directly to a post office box that is controlled by the payee's financial institution. The services provided include picking up the mail at the post office, opening it and crediting the funds, or receiving the opened letters and crediting the funds to the company's account. A fee is imposed for each function the financial institution performs for the company.

Lockbox operations are used to speed the collection of remittances and reduce "float"* by eliminating the time required to transfer payment from a company to the financial institution. Interestingly. lockbox operations are offered by other institutions, also. For example, in July 1983, Sears Roebuck & Co. announced that it would provide retail lockbox processing for Pittsburgh's Mellon Bank in seven cities across the country. With its national presence, Sears is in a unique position to offer such services. This arrangement will not only reduce float for the bank's corporate customers but also decrease processing costs, since a larger number of the checks received could be processed locally and not as interregional items through the Federal Reserve Board's check processing system. As noted in *American Banker,* "Interstate banking restrictions have prevented banks from opening offices around the country to accept deposits, and thus most banks have operated lockboxes only within their own State. Lately, however, a number of banks have begun to expand their geographic coverage through joint marketing arrangements and correspondent relationships."[2]

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*An amount of money represented at any one time by checks outstanding and in the process of collection. The period of time between receipt of notification of payment by the creditor and the actual debiting of the consumer's account.

Demand Deposit Accounts

For users of demand deposit accounts, institutions make funds explicitly available to the user without any optional or contractual delay. Demand deposits represent a significant portion of the domestic money supply. As of December 31, 1981, demand deposits for all commercial banks totaled $370 billion.[3] A checking account is a demand deposit account. The check is the instrument that activates the checking account and is the end-product of the original written instructions used by an individual to make a payment from a credit balance. A written check is deposited into an account (the collecting bank) by the creditor, wherein it circulates within the banking system as an instrument to debit the account of the debtor at his bank (the paying bank).

By law, demand deposits do not yield interest for the account holder. Although several other types of accounts use a check to access funds, these accounts are not considered demand deposit accounts.

Drafts

Drafts are essentially an expanded collection service, with funds being transferred when the payer orders the bank to pay the draft. They are used by credit unions, which technically classify their transactions as purchases of shares in equity accounts and money market funds. Credit unions began to offer share draft accounts as a competitive tool against the checking accounts offered by banks. The draft itself is debited against the individual's account. Although to the consumer, a draft looks and works much the same way as a check, it differs in two ways: 1) it may have a specified time constraint and can be drawn on an individual, corporation, or bank; and 2) the initiative for payment of goods is taken by the seller, not the buyer.

The three types of drafts are: 1) sight—payable immediately on presentation; 2) arrival—payable on arrival of goods; and 3) time—payable at a fixed date. There is a considerable amount of float associated with checks/drafts because funds need not be in the bank on which the item is drawn until the day the check/draft reaches the bank and is presented for collection. Float in this case can work to the advantage of the depositor in that funds also do not sit idle. The company can transfer the amount needed to cover the check/draft, leaving the balance in higher yielding investments.

Although presently a heavily paper-based instrument, drafts are being converted into a form of electronic billing service whereby vendors can collect from customers by sending an electronic debit (draft) to their account.

Giro Transfers

While checks are a way to effect a debit transfer, the giro, which is an instrument not used in the United States, is a way of making a credit transfer. To effect a giro payment, the person making the payment instructs the institution holding his funds to transfer them to the account of the payee in the name of another institution. This is in contrast to a check given to the creditor that is finally presented at the debtor's bank for payment. Giro organizations usually send a statement to each account holder every day on which transactions are recorded; this is expensive in postal costs. "The notable feature is that the average value of paper giro transfers is higher than the average value of check payments in all countries except the United Kingdom."[4]

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[2] *American Banker*, July 29, 1983.

[3] Federal Reserve Statistical Release, April 1983.

Traveler's Checks

Another form of a deposit transaction is the traveler's check. The traveler's check is "paid for" in advance by the purchaser, generally with a premium of 1 percent of the value. It is considered a deposit because the funds are held by the issuing company until the traveler's check is redeemed by the purchaser. This instrument works and is accepted, for the most part, like cash. It can be a universally accepted payment mechanism and is considered a deposit instrument.

Savings Accounts

A savings account is an interest-bearing account used to accumulate and safekeep funds. Institutions retain the optional right to require written notice of an intended withdrawal, often not less than 14 days before withdrawal is made.

Despite the notice requirement, a savings account is in practice extremely liquid. Until recently, most people used their savings account as a long-term savings/investment vehicle, even though several alternatives offered higher explicit interest. However, new options available have made the consumer more concerned with earning explicit interest on his money. As a result, savings accounts are being increasingly used only as short-term repositories or as interim investment vehicles during the accumulation of funds sufficient for supporting higher denomination and higher yielding investments. They are also frequently used to establish and maintain a relationship with an institution for the purpose of eventually using other services, such as loans and check cashing.

Savings accounts take the following forms:

1. *Conventional savings accounts.* Conventional savings accounts offered by depository institutions are designed primarily for individuals. Savings accounts may be issued in passbook or statement form and involve the institution's periodic issuance of summaries of deposits and withdrawals. Savings deposits do not have maturity dates, but a hold may be required before withdrawal—most often on deposits made by check, but possibly on cash deposits, also. This is rarely, if ever, imposed, and for the most part, individuals regard these accounts as being very liquid. As defined by the Federal Reserve, a savings account from which more than three telephonic or preauthorized transfers are permitted per month is considered a transaction account, with the specific exception of the money market deposit account.

   Savings accounts presently have a regulated interest rate set by Federal authorities and governed by the Depository Institutions Deregulation Committee (DIDC). Until these ceilings are finally phased out (scheduled for 1986), the ceiling is imposed on interest rates for federally insured banks and thrift institutions. Effective January 1, 1984, the differential interest rates on passbook savings accounts and 7- to 31-day deposits under $2,500 at both thrifts and commercial banks were removed, with each having a ceiling of 5½ percent.

   Federal deposit insurance of up to $100,000 per account holder is provided in all but a very few depository institutions. The Federal Deposit Insurance Corporation (FDIC) insures accounts in commercial banks chartered by both the

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[4] Jack Revell, *Banking & EFT—A Study of the Implications*, p. 143.

Federal and State Governments and in mutual savings banks. The Federal Savings and Loan Insurance Corporation insures accounts in federally chartered savings and loan associations and savings banks. The Credit Union National Administration (CUNA) insures accounts held in federally chartered credit unions. In addition, some States have insurance programs to cover deposits in State-chartered institutions, such as savings and loan associations, that are not eligible for Federal deposit insurance.

Credit unions provide savings services as well, including savings accounts (which are insured up to $100,000 per member by CUNA, investment certificates, money market certificates, share savings accounts, and individual retirement accounts.

2. *Time deposits.* The owner of a time deposit accepts limitations on his withdrawal rights. The account is established with the idea that the funds are on deposit for a negotiated period of time in return for receiving an offered interest rate. Certificates of deposit (CDs) are interest-bearing time deposit instruments issued by a depository institution for amounts that can vary from as little as $100 up to more than $100,000. CDs pay interest at maturity and cannot be withdrawn from the bank without penalty prior to their maturity date. The most commonly offered maturities are 91 days, 180 days, and 1 year. Although most CD rates are tied to Treasury bills and longer term Treasury securities, some of the funds do receive an unregulated market rate of interest. Large CDs are typically issued in negotiable form, so they may be traded in an organized market.

The Depository Institutions Deregulation and Monetary Control Act of 1980 (DIDMCA) was enacted to provide for the orderly phase-out and the ultimate elimination of ceilings on the maximum rates of interest and dividends that may be paid on deposit accounts. The act transferred the authority to set interest rate ceilings on deposits at federally insured commercial banks, savings and loan associations, and mutual savings banks to the DIDC, whose members are the Secretary of the Treasury; the Chairman of the Federal Reserve Board; representatives of FDIC, the Federal Home Loan Bank Board, and CUNA; and the Comptroller of the Currency, a nonvoting member. The law provides for a 6-year phase-out of ceilings on deposit rates, during which the committee has the discretion to set ceiling rates on deposits based on economic conditions. (The committee has been given a schedule for targeting the gradual phase-out of such ceilings.) During the transition period, credit unions are subject to separate regulations. In 1986, all Regulation Q authority expires, CUNA's authority to set interest rate ceilings for credit unions terminates, and the DIDC ceases to exist.

Under DIDMCA, the committee has eliminated (effective Oct. 1, 1983) all interest rate ceilings on (a) all time deposits with original maturities or required notice periods of more than 31 days; and (b) time deposits of $2,500 or more, with original maturities or required notice periods of 7 to 31 days. Also, the committee has eliminated other regulations on time deposits except for the minimum early withdrawal penalties; a minimum denomination of $2,500 for ceiling-free time deposits with original maturities or required notice periods of 7 to 31 days; current ceiling on time deposits of less than $2,500, with original maturities or required notice periods of 7 to 31 days; and agency rules that require a 1-percentage-point differential between a loan rate and the rate on a time deposit securing a loan.

DIDC also established new minimum early withdrawal penalties: for time deposits with original maturities or required notice periods of 32 days to 1 year, loss of 1 month's simple interest; for time deposits with original maturities or required notice periods of more than 1 year, loss of 3 months' simple interest.

These changes helped reduce the competitive edge previously enjoyed by nondepository institutions against depository institutions because a large number of financial services being offered by the nondepository institutions were attractive, offered higher interest rate return, and were not subject to regulation. Funds placed outside of the depository institutions are not federally insured; however, the individual appears to be more concerned with return on investment than the risk associated with placing funds outside of federally insured depository institutions.

3. *Money market deposit account.* The money market deposit account, a high-yielding liquid account, was authorized by the Garn-St Germain Depository Institutions Act of 1982 to allow commercial banks and thrift institutions to compete with money market mutual funds. The account is available to all depositors, including businesses. It requires an initial balance of at least $2,500 and has no interest rate ceiling. A 7-day hold on withdrawal can be imposed by the depository institution. Additionally, the money market account allows for up to six third-party transfers, including up to three by draft and up to three preauthorized transfers per month. There are no restrictions on making withdrawals from the account in person, by messenger or mail, or by ATM. The funds are federally insured. If the minimum balance falls below $2,500, the interest on the funds reverts to the statement/passbook rate and remains at that rate until the balance is brought up to $2,500. Unlike some restrictions imposed by the money market funds, there is no minimum on the size of an account's withdrawals or deposits.
4. *Negotiable order of withdrawal (NOW) and Super NOW account.* NOW and Super NOW accounts are unique savings instruments because they are interest-earning transaction accounts. Although they can be accessed by a check, they are not considered demand accounts because the offering institution can impose a hold before honoring the withdrawal, although it is a restriction unlikely to be enforced. Individuals regard these accounts as rather liquid, and most are probably unaware of the restrictions that can be enforced. The NOW account does not legally require a minimum to open the account, although most institutions require a minimum balance of $500.

   The Super NOW account is primarily a combination of the NOW account and the money market deposit account. The Super NOW, which DIDC authorized as a financial instrument as of January 1983, requires a minimum initial deposit of $2,500 and an average balance in any month of $2,500. The account has no interest rate ceiling, although the funds revert to a conventional savings account yielding the regulated interest rate under Regulation Q if the account falls below the minimum balance. Additionally, a 7-day notice of withdrawal may be required. Because the notice of withdrawal requirement applies to such funds, they are categorized not as demand deposits, but as savings deposits. These accounts are not available to for-profit businesses. They are available to Federal, State, and local governments, as well as to nonprofit organizations and individuals.
5. *Savings bonds.* Savings bonds are sold by the U.S. Government to generate revenue. They are issued at a discount and appreciate at a rising rate in specified increments to a stated value at maturity. Bonds may be redeemed before maturity, but the interest rate becomes higher the longer the bond is held.
6. *Savings certificates.* Tailored to the needs of individuals in terms of deposit time (generally 90 days, 5 years, 10 years), savings certificates have interest rates that are dependent on maturity time and current rates. Savings certificates are not negotiable and are issued by depository institutions for $100 up to $100,000. There is a penalty for early withdrawal.

The latest figures[5] indicate deposits, as of October 1983, in various savings instruments:

Super NOW accounts: $27 billion
NOW accounts: $100 billion
money market deposit accounts: $369 billion
money market funds: $138 billion*

Insurance

In today's competitive environment, commercial banks, savings and loan associations, and savings banks not only vie with one another to attract new deposits, but also compete with many nondepository organizations. One of the largest providers of financial services is the insurance industry. It has a sizable customer base (insurance products are used in almost every household or business) and is a major lender of funds to businesses. The insurance industry has access to an enormous amount of capital. Insurance companies are enormous financial intermediaries in that they collect and invest vast amounts of premiums on policies. Life insurance companies collect premiums from policyholders, invest the receipts until needed, pay death benefits to heirs of those who die, and make payments to those who redeem policies and/or take out loans against their cash value.

Insurance companies channel funds into various investment outlets and qualify as significant allocators of financial resources in the economy. Their investments are made in almost every sector of the capital market and in a wide array of investment outlets. Their investment decisions are based on a philosophy of maximizing their rate of return within the bounds of State investment laws and on the principle of safeguarding the security of the funds invested.

Life insurance saving differs fundamentally from saving through deposit-type institutions for at least three reasons: first, it is long-term and contractual in nature and is therefore more stable; second, it is motivated primarily by the desire for family financial protection in the event of death; and third, it is ordinarily expected to be left intact until the death of the insured rather than withdrawn for some consumer expenditure.

Insurance policies exist in almost every household. They take such forms as automobile insurance, property insurance, and health insurance. Such a strong presence permits the industry to introduce and market new financial products and services with relative ease. Insurance companies now offer several products that are treated like deposits. Two new products introduced into the market in 1983 are quite interesting—one works like a cash management plan for businesses under $10 million; the other works as a securities and cash management service. These accounts feature money market funds, checking accounts with unlimited access, lines of credit, an overdraft, and a Gold MasterCard, which does not carry a line of credit. The customers' money market accounts are debited each month to cover card charges. The checking and charge card operations are handled by a local bank for the insurance company. The investment accounts are offered in conjunction with an investment firm. Both products require a minimum of $10,000, and customers are penalized whenever their monthly average drops below $5,000 for 2 consecutive months.

Another instrument of the insurance industry is *universal life insurance,* which is an investment vehicle. It functions like a depository instrument and is a flexible investment vehicle with access to mutual funds. It offers the policyholder flexibility because the cash value buildup or funding phase—which makes it appear to be a savings instrument—and the pure life insurance phase of the traditional whole-life insurance policy are separated. A company can declare competitive interest rates on the funding phase, and the policyholder can vary the amount and frequency of premium payments and the amount of death benefits.

Whole life insurance provides a constant amount of insurance for the same premium over a lifetime. It is payable to a beneficiary at the death of the policyholder, and premiums are payable for a specified number of years or a lifetime. A policyholder is entitled to the cash value if he cancels the policy. Since the policyholder may borrow from the insurance company against the cash value of the policy, policy reserves may be viewed equally as a legal liability of the insurance company and as an investment of the policyholder. Life insurance companies make loans against the cash value of whole-life insurance policies. These accounts play a significant role in the insurance companies' lending ability. The policyholder has the right to borrow from the insurance company any amount up to the cash value, at a specified rate of interest. Moreover, earnings on insurance are partially tax-exempt.

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[5] Federal Reserve Statistical Release, Dec. 16, 1983.
*These funds are not federally insured.

Just as insurers will increasingly compete in the provision of financial services, other financial service providers will increasingly compete with insurers in the provision of insurance. The unbundling of insurance products has revealed that there are significant functions in the operation of insurance that involve the performance of noninsurance services.

The insurance industry is in a position to expand its service offerings to include a myriad of financial products. This is possible for several reasons. As discussed, some insurance products being offered resemble existing products being offered by depository institutions. Also, modifying software for existing systems enables the company to create new products and services. For example, insurance companies could easily offer a money market fund and additional services that can be implemented with relative ease and minimal capital.

The insurance industry is adapting automation in many ways. Insurance agents, for example, are internally incorporating automation to manage office functions, such as client information and accounts receivable and payable. They are applying automation to increase efficiency and to improve marketing. Externally, communication and information technologies are used to tie into carriers where they are able to obtain quotes and to underwrite business themselves. Many large networks are being developed that enable the agent to obtain pertinent information online as well as directly relay information to the carrier.

Technology is used to support other services of the insurance industry as well. Claims services, for example, are now becoming automated. The claims process, which is heavily paper-based, is being handled by converting the information electronically and transmitting it online to the carrier, allowing the carrier to deal with the claim more effectively and to maintain more control over the settlement process.

The automation of risk management services for large corporations allows them to handle in-house insurance analysis. These companies are able to tie into networks that provide important and timely information used to assess and manage risk.

Accounts With Other Nondepository Institutions

Insurance companies, large retailers, and virtually every kind of financial service organization offer individual retirement accounts (IRAs), money market funds, and a myriad of investment services. Although the funds invested by individuals into nondepository institutions are not federally insured, this fact has not prevented individuals from investing in these instruments. The amount of money that has shifted from depository institutions into nondepository institutions has been significant. Previously, these types of institutions were very different from each other. When the concept of commercial banking was first conceived, commercial bankers made little or no effort to attract individual deposits, concentrating primarily on attracting demand deposits from businesses. Conversely, the savings banks and savings and loan organizations were not authorized to offer checking accounts, and their range of time and savings deposits was limited.

Today, that has changed drastically. Commercial banks fiercely compete with other depository institutions, insurance companies, and brokerage houses/investment firms for consumer deposits. All of these organizations offer accounts that can serve the customer in similar ways. However, the range of services available to the customer are not as markedly different from the customer's point of view as the products seem from the point of view of regulators or the providers themselves. An individual can easily establish an IRA or Keogh (retirement) account, obtain a loan, and use a checking or checklike account or savings account from any depository institution. He/she can obtain similar instruments from nondepository institutions such as insurance companies, retailers, and investment firms with cash management accounts.

Prior to the introduction of money market deposit accounts and Super NOW accounts, depository institutions were restricted as to the maximum interest payable on demand deposit accounts and savings accounts, with the exception of jumbo CDs and similar instruments. These restrictions helped reduce bank payouts on their liabilities and reduced customer earnings on short-term asset holdings in depository institutions. Since depository institutions could not compete on interest rates, they competed on the basis of services, which were actually subsidized by the spread between interest paid on money in savings and received on money loaned. The spread resulted from below-market rates paid because of the regulatory environment. This is changing. Zero-balance accounts are becoming widespread. Financial service providers have come to rely more heavily on fee income from services.

Large financial service providers have the privilege of offering several types of financial products. For example, the use of information technologies enables firms such as American Express, which owns Fireman's Fund American Life Insurance Co., to market additional services directly to their strong credit card base. They can offer insurance services and have the premiums be added directly to the American Express card account.

Extension of Credit

One of the principal functions of the financial service industry is intermediation between holders of assets and those in need of funds. Funds are gathered through the deposit-taking activities described in the preceding section. Extending credit, described in the following pages, is one of the mechanisms used to make funds available to those requiring them.*

Historically, credit extension has been one of the principal sources of revenue for the financial service industry. The rate differential between that paid on deposits and that charged on loans was sufficiently great to support many of the services offered by financial institutions. However, one of the effects of deregulation of the rates paid on deposits has been to narrow this differential and cause financial service providers to look elsewhere for revenue. They have turned to information processing and telecommunication technologies to improve the efficiency of their internal operations and as the foundation on which new revenue-generating products can be built. One of the most promising opportunities for cost saving is converting as many paper-based transactions as possible to electronic processes.

Interest rate fluctuations, such as those experienced over the past several years, have made the problem of portfolio management more difficult for financial service providers. Some found themselves faced with the problem of supporting long-term, fixed-rate loan portfolios with short-term, expensive deposits and few options for correcting the imbalance. Congress increased the powers of savings and loan associations to help them overcome this problem.

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*Funds are also made available by investors who take an equity position in the organization requiring funds. Equity instruments and the markets for them are described in ch. 3.

One of the responses of the financial service industry to the disappearance of the interest spread has been to encourage individuals and businesses to view all of their liabilities and assets as a total package and to manage them as such. The goal of some institutions is to place themselves in the role of financial advisor to their customers. On the one hand, these institutions would like to generate revenue by providing advisory services for which a fee may be charged or services that would attract business and customer loyalty, resulting in most financial service needs being purchased from a single organization.

To this end, service providers are using their credit products to increase the effective liquidity of assets held by consumers. In addition to such traditional offerings as credit cards, they are creating lines of credit secured by a variety of assets that range from home equity to securities portfolios. Ease of activating lines of credit is emphasized. In the case of an overdraft account, the same check or debit card that is used to draw funds from a transaction account is the instrument used to activate the line of credit when the funds in the account are exhausted. Some institutions issue checks that can be used to draw against home equity at the convenience of the customer. The customer benefits by being in a position to take advantage of opportunities to make either purchases or investments on favorable terms that may be available only for limited periods.

Information processing and telecommunication technologies are key elements in supporting the viability of the credit products that are now offered. One of the reasons a credit card issuer can guarantee payment to the merchant accepting it is the ability to keep track of account activity and effectively to halt its use almost instantaneously if circumstances require. The processing and clearing of credit card drafts would be virtually impossible without the technologies. Paper is truncated early in the processing cycle as one factor in controlling costs of processing and to facilitate the timely posting of transactions to customers' accounts. Some merchants submit transaction data electronically to card issuers to facilitate processing.

Credit has long been a tool of the retail industry. Card bases have been created on the assumption that they help create and maintain customer loyalty and facilitate impulse purchases. Advertisements are regularly included with customer bills. While most retailers do not rely heavily on revenues generated from retail receivables, the funds generated can be considerable.

Some retailers see third-party cards such as those offered by banks as an interference in their relationship with their customers. Retailers feel they should know when a customer is activating a line of credit so that an alternative can be offered. Also, retailers question the propriety of card issuers charging the same discount for a card transaction, whether it activates a line of credit (credit card) or is used to access a transaction account (debit card) in lieu of a check.

While individuals make extensive use of a variety of credit services, businesses and governments are also major users of credit. Generally, these users are quite sophisticated and use a number of services that are not available to the general public. The Federal Government is active in the primary credit markets as an issuer of debt. Also, one of the primary means used to implement monetary policy is trading by the Federal Reserve System in Federal Government securities in the open market.

Further complicating the credit markets is the multiplicity of providers of credit services. Depository institutions and retail merchants have been mentioned. However, among other participants in the market are consumer financial companies, mortgage bankers, insurance companies, pension funds, and acceptance corporations, such as those operated by major automobile and appliance companies. Private individuals also make loans, as is the case when the seller of a home takes a second mortgage from the buyer for a portion of the purchase price.

Credit is extended in the following ways:

1. *Installment credit*—a direct loan to an individual or business, repaid in fixed, periodic payments; it is a type of closed-ended credit. A typical example is a car payment loan.
2. *Open-ended credit, often called revolving credit*—funds that are available under an agreement that allows the borrower to borrow several times, up to specified credit limits, with interest and without further investigation of creditworthiness. Many charge accounts at department stores and credit card accounts are examples. Since part of the loan is repaid over time, the borrower can again draw against the line up to the predefined limit. This type of credit is often open-ended with respect to time and the total amount of credit available. Minimum payments are required, and the maximum amount of credit extended is limited.
3. *Closed-ended credit*—a loan that is extended for a predetermined amount. The borrower cannot reopen it by obtaining extra funds under the original lending agreement.
4. *Line of credit*—the amount of credit a lender will extend to a borrower over a period of time, where the borrower can draw on the line up to some fixed limit at his/her discretion. Generally it involves a specified amount of money a customer may borrow without filing a new loan application. A personal line of credit on checking accounts is one example; the credit card with a line of credit is another. Each month, the individual cardholder chooses between complete payment of the invoice or extended credit, with the choice of making a minimum payment. The credit is used not only for purchases and credit payment, but also for obtaining cash advances. With the exception of cash advances, the cardholder can pay the entire amount due without finance charges.

Commercial Credit

Commercial credit is the credit extended to businesses by various lenders. Commerical banks are the primary funders of commercial credit, but recent legislation gave savings and loan associations limited power to participate in this market. Others, such as acceptance corporations, leasing companies, and factoring companies are also active. Generally, the debt is short term and is used to meet requirements for working capital, such as the funding of receivables or inventory.

Much commercial lending activity is conventionally viewed in the category of wholesale rather than retail financial services. For example, commercial banks will purchase consumer debt from consumer finance companies, which then lend the funds to individuals at higher rates than banks charge. Commercial lenders also finance capital acquisitions through third-party leases that cover such items as aircraft and computers.

Commercial organizations will also float debt in the open market, where it may be purchased by any variety of lenders. One is short-term commercial paper; but, as discussed in the chapter on the securities industry, long-term bonds are also issued.

Consumer Credit

Consumer credit is a specified amount of credit that is extended to individuals primarily for personal, family, or household purposes by a number of types of institutions that include issuers of travel and entertainment cards, retail merchants, consumer finance companies, and acceptance corporations. Early on, depository institutions began to recognize that consumer loans were not only an asset to the bank, but also a contribution to the overall economy. Consumer credit loans are extended to individuals or small businesses and provide for repayment either monthly, quarterly, annually, or in full at maturity. Consumer credit can be extended through loans, overdrafts, credit card checks, and credit cards.

Loans

The extension of credit is perhaps best recognized in the form of a loan. Simply defined, a loan is money lent, generally to be repaid with interest. Loans can be made on a secured basis, where the funds are protected by pledged collateral, or on an unsecured basis, where the funds are extended with no pledge of collateral. Loans are made to consumers and businesses on a regular basis. A loan is an agreement between two parties. The lender does not have to be a financial institution. Loans can be secured by life insurance, contracts, deposits in financial institutions, securities, or personal and real property. Banks, acceptance corporations, consumer finance companies, and credit unions are major lenders of consumer credit.

Overdrafts

Credit can also be extended through an overdraft, which is a check or payment order written against a demand deposit or transaction account for funds in excess of the balance. It must be arranged in advance, and when honored by the depository institution, the overdraft creates a loan. If approval for overdraft privileges has not been obtained in advance, overdrafts are prohibited. Basically, the overdraft can be defined as an instrument that operates with a credit limit, fixed by the institution for each customer and reviewed periodically. Since the application of an overdraft is typically for personal use, it is rarely secured. The arrangements for repayment of the overdraft are set by each institution.

Credit Card Checks

Credit card checks are special drafts written against a credit card account rather than a demand deposit account. They are issued in conjunction with a credit card account and access a credit line. They work just like a personal check; however, the amount is charged automatically to the credit card balance at time of use. Credit card checks are treated as cash advances, with the monthly statement reflecting the advance. When used, interest is paid on money borrowed from the day the check is written. Merchants do not have to pay the discount and service fee associated with all card transactions when credit card checks are used.

The development of credit cards has helped satisfy the demand from consumers for a more convenient way to finance their day-to-day credit needs.

Credit Cards

With the advent of electronic banking systems, the plastic card has become commonplace in today's financial institutions and retail organizations. Nearly all customer/bank communication terminals—ATMs, remote service units, POS terminals—use card technology in some form. The card is used to access funds in various accounts and as a medium to extend credit. Today, almost 600 million credit card accounts exist in the United States, and 7 out of 10 households have at least one credit card. Outstanding balances on credit card accounts total more than $75 billion.[6]

Electronic processing has helped minimize the amount of paper used in handling credit cards, and online credit authorization has helped encourage card use because it entails less of a waiting period. The transaction can be approved and completed within a time frame that is acceptable to the customer. Today, there are many online POS terminals for credit authorization throughout the United States. Generally, any credit card can be accepted by the systems, which operate over standard telephone lines.

Credit cards offer the individual the ability to defer payment of part of the balance due as part of an extension of credit. A dollar, or floor, limit is established, which permits using the card without credit authorization at the time of purchase. For purchases over the required floor limit, credit approval is necessary. Ceilings are generally set on the total amount the cardholder may have outstanding.

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[6] Federal Reserve Board, *Credit Cards in the U.S. Economy—Their Impact on Costs, Prices and Retail Sales*, July 27, 1983, p. 1.

Over the past several years, many of the card-issuing organizations have imposed annual fees to the cardholder for use of the card. Interest paid on outstanding balances falls under State usury laws. Certain State laws, however, place rigid standards on such actions. The result has been: 1) higher annual interest rate charges to the cardholder, where permitted by usury laws; or 2) the relocation by the card-distributing organization of its credit card processing facilities into States such as Delaware and South Dakota, which permit higher interest, card fees, or both, so that the card-distributing organization is able to operate under the banking laws of the State where the processing is done.

Card-issuing organizations impose annual fees on credit cards as a way to generate additional income. These funds were needed because of the high interest rates financial institutions were paying for funds. Additionally, the annual fee charge is a way to generate income from those individuals who use the bank credit card as a convenience mechanism and who pay the monthly statement charges in full and therefore do not incur interest charges.

Basically, there are three kinds of credit cards: bank cards, travel and entertainment cards, and retail and nonbank cards.

Bank Cards.—The bank credit card has become an integral part of the American lifestyle. Bank credit card systems have a structure all their own. The two major bank credit card systems are VISA and MasterCard. VISA International is owned by over 15,000 member financial institutions located in almost 100 countries. Over 100 million cards have been issued, allowing consumers access to checking accounts, savings accounts, investments, and lines of credit. VISA U.S.A. is jointly owned by U.S. financial institutions, including banks, savings and loans, credit unions, and mutual savings banks. VISA operates a worldwide electronic data communication system that transferred nearly 1 billion transactions between member institutions in 1983.[7]

For processing purposes there is no distinction between a VISA debit or credit card. The same processing procedures apply for both cards; therefore, only the card-issuing institution and the cardholder are familiar with the function of a particular VISA card.

Each card-issuing financial institution sets the policies for its own customers in the VISA system. These policies are regulated by applicable State laws that limit maximum charges on credit card accounts, the method of assessment of finance charges, and minimum charges that can be imposed on credit card accounts. Different card-issuing banks nationally may compete with one another and may have slightly different policies. Generally, the most important competition exists between banks as they attempt to sign consumer and merchant accounts. The merchant discount offered to encourage acceptance of the card at an establishment is one of the primary competition tools.

Bank credit cards have become subject to credit controls because of their role in extending consumer credit. They are recognized as instruments for installment lending to consumers and as loans by banks. The controls tend generally to be the ones applying from time to time to consumer credit. The controls include compliance in usury limits and truth in lending as set forth in Regulation Z.

To examine critically the national bank card systems and the member institution's role as an extender of credit in the financial service industry requires some analysis. Inherent in every payment device are two separate and distinct services. The first is payment for goods and services, and the second is the extension of credit. The first has traditionally been priced in free and open competition and has not been subject to usury laws. The second has traditionally been subject to usury laws. Whether the card is used solely as a payment device or as a credit device, by deferring payment of the full balance, is determined by the cardholder. The use of electronic technology and plastic cards has made it possible to combine multiple functions in a single device, blurring the distinction between what constitutes payment service and what constitutes extension of credit.

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[7] VISA, U.S.A., *Credit Controls and Bank Cards Analysis and Proposal*, March 1980.

The national card systems have also expanded their use to include card access to ATM networks. Several ATM systems established by banks use VISA or MasterCard as the access card to a proprietary system. However, both VISA and MasterCard have also set up their own national ATM networks to compete with national interchanges. They are in the process, like other national ATM interchange networks, of attracting ATM networks from across the United States to join their systems. VISA also plans to establish a global ATM network.

Because Delaware and South Dakota allow higher interest charges or annual fees for the bank card, a number of depository institutions have moved their processing centers to these States. Although technically it makes no difference where the actual processing is done, the critical elements are the type and location of the organization issuing the card and the laws that govern the State where the cards are being distributed. Credit cards are also distributed by nondepository organizations, such as the American Automobile Association, and by brokerage houses. These cards are, however, tied to a financial institution for processing and credit extension.

Travel and Entertainment Cards.—Travel and entertainment cards serve the general public in relatively the same manner as a bank card. They offer the possibility of deferring payment. Generally, the monthly limit associated with these cards is far greater than that of the bank card; some are issued with no preset expenditure limit. The cardholder is charged an annual fee, and the monthly statement must be paid in full. As the name implies, these cards are intended mostly for travel and business use. Travel and entertainment card companies generally follow more stringent guidelines in issuing the charge card than do issuers of other cards.

Several elite versions of the travel and entertainment card exist; for example, the American Express Gold Card. These elite cards offer check-writing privileges and a higher floor limit for purchasing goods (which exceed those for the conventional card). Both the Gold and conventional cards provide access to ATMs and traveler's check dispensers and ease of check cashing at hotels and American Express offices.

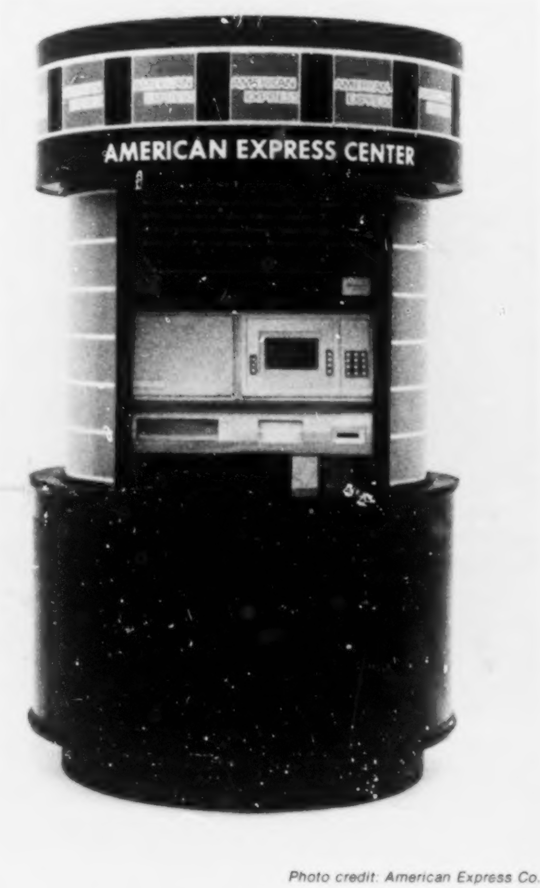

Photo credit: American Express Co.

Automated traveler's check dispenser

Travel and entertainment card transactions are consummated in the same manner as with bank cards. The difference is, however, that the drafts are accumulated and billed monthly to the consumer, with the full amount due within a specified period after billing. Since this process is considered a payment service, its cost is unrelated to the funds outstanding, which are not considered a loan of money with respect to usury statutes or annual percentage rate disclosures. Usury statutes apply only when the cardholder elects to pay in installments through a prearranged line of credit with a financial institution.

Retail and Nonbank Cards.—Retail credit cards are distributed by both large and small retail and service organizations, which have been in the business of extending credit to individuals and organizations for some time and were the leaders in establishing the credit card. Large chains of retail stores, gas/oil companies, and hotel and travel businesses run their own credit card operations. Sears Roebuck, the largest issuer of retail credit cards in the United States, accepts only the Sears credit card in its stores.[8] J. C. Penney, also a major retailer, accepts not only the J. C. Penney proprietary credit card but also VISA and MasterCard. J. C. Penney, for example, has a very complex electronic network system, enabling it to service accounts online throughout the country. The Penney system supports 35,000 online terminals, allowing access to the VISA system directly without the need for a financial institution intermediary. It is the only retailer to do so. Retailers continue to encourage the use of their proprietary credit cards for several reasons: 1) to provide convenience to their customers, 2) to tie their customer base to their stores, and 3) to facilitate impulse purchases.

Card operations can also cross companies. J. C. Penney, for example, processes credit transactions for oil companies. The authorization is accomplished by running dedicated lines from the service station to the nearest Penney store. The signal is then sent over the main trunk line to the data center where the authorization file is maintained. The information is captured and transmitted to provide a basis for generating customer invoices.

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[8] *Nilson Report*, June 1983.

Electronic Funds Transfer

Funds transfer is defined as any transfer of funds by means of a check, draft, or similar paper instrument or by electronic means through a terminal, telephone, computer, or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account. A transaction can take several forms: cash purchase, charge purchase, purchase by check or draft, deposit to an account, withdrawal from an account, or a debit from one account to another account owned by the same party, interbank, or intrabank. A currency-based funds transfer uses cash or coin. A paper-based transfer of funds is activated by check, draft, or bank card/charge card (when the transaction is not tied directly to a communication system that facilitates an immediate debit or credit).

Electronic funds transfer (EFT) enables consumers to carry out financial transactions via electronic devices instead of using paper money or checks. Electronic funds transfers can be carried out through use of an ACH, a home banking system, an ATM, or a POS system. One example of an EFT transaction is the use of an access card, a plastic card encoded with an identification number to trigger the electronic impulses. Although debit cards allow access to an account with adequate funds, some debit cards may also be used to borrow money, thus becoming all-purpose transaction cards.

Automation and electronic payment systems have often been at the forefront of recent changes in financial service organizations. Certainly one main effect of these changes lies in the cost reductions that have been made possible by the elimination of paper-based transactions, which are personnel-intensive and, therefore, costly. Electronic financial services, however, are not pervasive. While the deployment of ATMs, for example, appears to be prevalent in major cities, smaller towns and remote areas of the country still rely on traditional systems for delivering financial services, although this picture is rapidly changing. While individuals depend on traditional services, many of the financial service providers rely on automation for the ease and efficiency of operating the services. Network systems continue to expand because communication and information technologies enable a broader geographic base to be served and allow increased transaction volume without a proportional increase in costs.

EFT has come to play an important role in the financial service industry. Although EFT systems have been operational since the late 1960's, it wasn't until the mid-1970's that their acceptance became more obvious. Electronically transferring funds today involves several methods: direct deposit, credit and check authorization at point of sale, and most notably, use of the ATM. To some degree, although they have not penetrated the market as greatly as the ATM, the POS terminal and remote information systems, such as home banking, also play significant roles.

Automated Teller Machines

The first applications of automation in customer services were very simple cash dispensers that provided the user with a fixed sum of cash in a single denomination. These systems generally operated off-line, so the transaction was not a direct debit. Now ATM systems offer most of the same transaction capabilities as a branch bank, allowing consumers to withdraw cash from a bank account, make deposits, borrow cash against a line of credit, obtain a cash advance on a credit card, pay bills, transfer funds from one account to another, and inquire about account balances. (The relative use of ATM functions is illustrated in fig. 7.) Credit can be obtained either by granting of overdraft limits or, in some cases, through using a credit card rather than a debit card to activate the machine to obtain a cash advance. Systems vary, however; some are merely cash dispensers, although the technology of the different systems is basically the same.

The plastic card's magnetic stripe is the "key" that unlocks the machine for use. The way the data are encoded and what items of information are placed on the magnetic stripe varies. A great deal of attention has been paid to the standards being developed for the plastic card.

Although the cost of ATMs has fallen significantly since their introduction, "the cost of ATMs is unlikely to fall as rapidly as that of many other parts of an electronic funds transfer system because of the various mechanical parts that are necessary. The capacity to process transactions and information will become much cheaper as intelligent terminals are developed, with display screens and keyboards being largely electronic. There are many mechanical parts in the dispensing of cash, in the printer, and in the mechanisms for accepting funds. A further result of the mechanical nature of cash dispensing is the shorter life of currency because it quickly becomes unsuitable for use in cash dispensers"[9]

With the ever-increasing operating costs for traditional delivery systems, the customer demand for new services, and the competition from new as well as traditional sources, most organizations in the financial service industry realize the need to use automated banking systems. The initial cost of establishing an ATM is high, but it is far less expensive than building a branch bank. And, unlike a branch, it can be operated around the clock at a fairly low incremental cost. Therefore, many bankers feel

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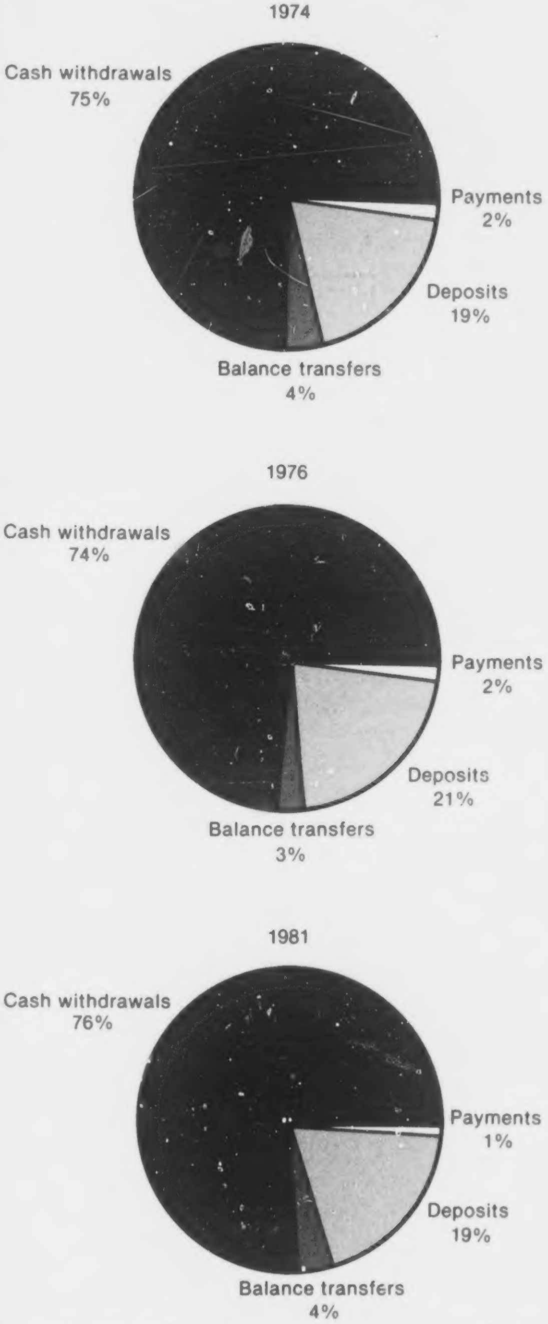
[9] Revell, op. cit., p. 44.

Figure 7.—Relative Use of ATM Functions,[a] 1974-81



[a] Excluding balance inquiries. Includes only years for which estimates based on field research are available.

SOURCE: *Economic Review*, Federal Reserve Bank of Atlanta, August 1983.

that ATMs will provide both competitive advantage and significant return on investment over the next decade. To soften the high cost of such systems, especially ATM networks, many financial institutions have entered into sharing arrangements.

The ATM, which is operated by the customer, can be located in a variety of places. In the United States many are installed either in the main banking space of bank offices, in lobbies partitioned off from branches, or on the exterior of a building. They can also be located away from the main bank, at shopping centers, grocery stores, gas stations, offices, and factories. Almost all systems are or will be online. The customer's plastic card allows him/her to gain access to the ATM location outside banking hours and to conduct his banking business in relative security.

The large success of ATM deployment has created another trend in bank branching. Instead of building large, full-service branches that are personnel-intensive and very costly, many organizations are replacing these structures with satellite branches, which are small-scale, highly automated, full-service, and generally require management by only two or three personnel. ATMs, for the most part, replace the teller; personnel are there to handle general information or other personal business. Figure 8 illustrates the growth in the number of ATMs in use from 1974 to 1981. Figure 9 illustrates the increases in the average number of transactions performed at each ATM.

ATM Systems

ATM services can be offered in one of four ways: a proprietary system, a shared system, an interchange system, and a piggyback system. In a proprietary system, or "single institution" system, only the customers of the bank that developed and installed the ATM system may use the machines. In a shared system, a group of financial institutions mutually researches, installs, markets, and operates the system. In an interchange system, separate institutions with ATM programs or even sepa-

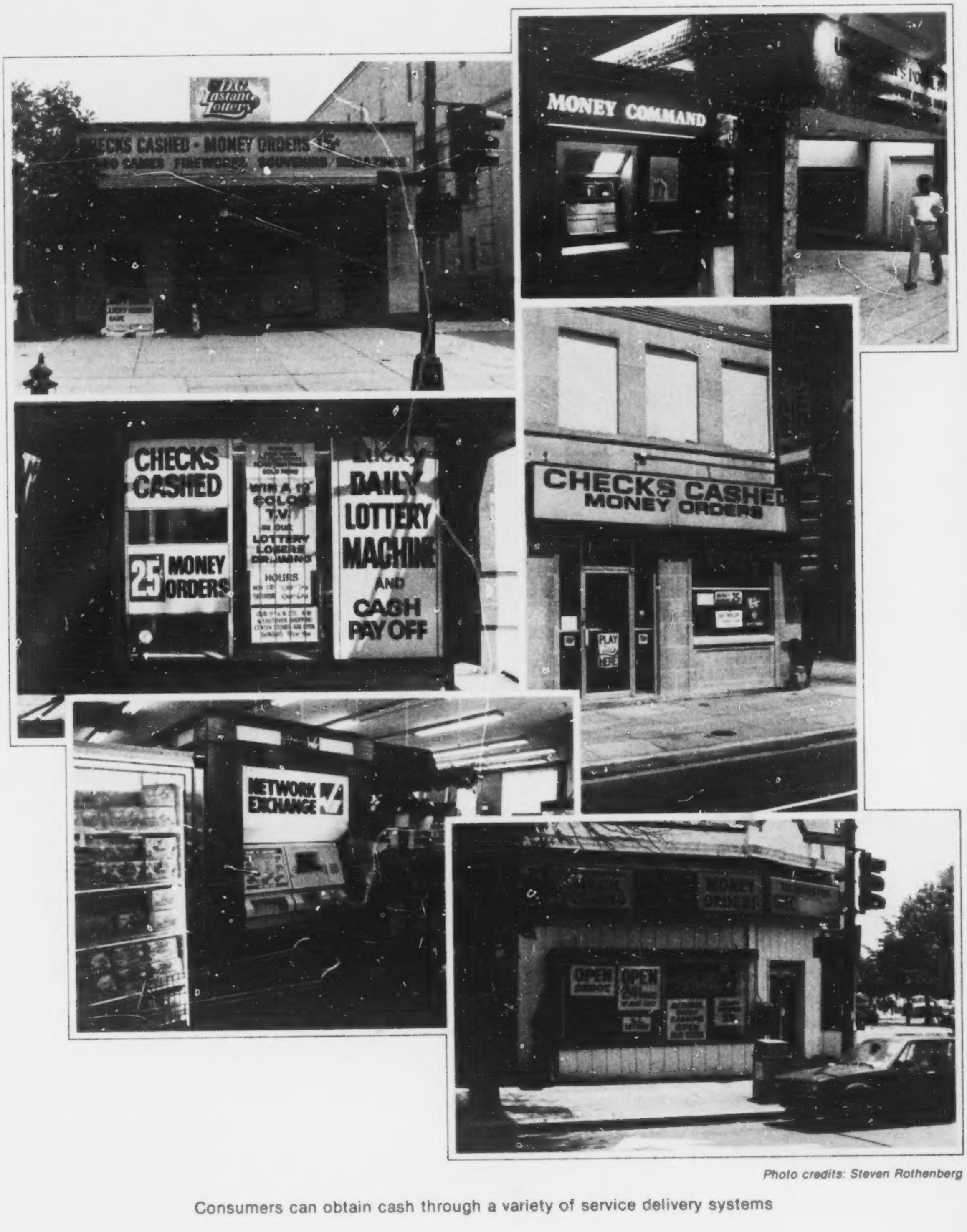
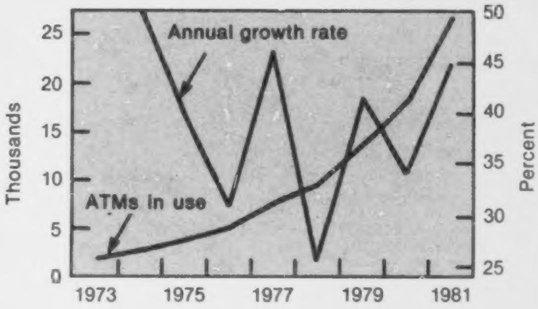

D.C. Instant Lottery
CHECKS CASHED • MONEY ORDERS 15¢
FIREWORKS
MONEY COMMAND
CHECKS CASHED
25 MONEY ORDERS
DAILY LOTTERY MACHINE AND CASH PAY OFF
WIN A 19" COLOR T.V.
HOURS
CHECKS CASHED MONEY ORDERS
PLAY HERE
NETWORK EXCHANGE
MONEY ORDERS
OPEN
OPEN 24 HOURS

Photo credits: Steven Rothenberg

Consumers can obtain cash through a variety of service delivery systems

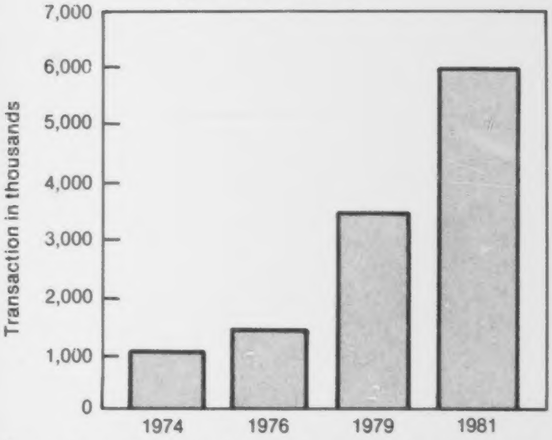
Figure 8.—Number of ATMs in Use, 1973-81



Average annual growth rate, 1973-81
34.78%

SOURCE: *Economic Review*, Federal Reserve Bank of Atlanta, August 1983, p. 16.

Figure 9.—Average Number of Monthly Transactions per ATM,[a] 1974-81



[a]Does not include balance inquiries, includes only years for which estimates based on field research are available.

SOURCE: *Economic Review*, Federal Reserve Bank of Atlanta, August 1983, p. 16.

rate, shared systems allow one another's customers to use their machines. The term "shared system" is associated with an interchange system. Generally, there is an interchange fee associated with using another institution's ATMs. A piggyback system occurs when one institution with equipment allows the customers of other institutions to use its machines.[10]

Shared ATM Systems

The number of shared and interchange systems is growing rapidly. As national ATM interchange proliferates, shared systems such as Plus and CIRRUS allow customers access to their funds on a national basis. National interchange systems, however, are not being run only by banking organizations. ADP, Inc., and American Express have also begun developing and marketing national ATM interchange networks. Supermarkets and retailers are also positioning themselves in the ATM arena.

There are, however, limitations to the kinds of services available through the national networks. Presently, because Federal regulation prohibits interstate deposit-taking,* most systems serve as cash dispensers and provide information about account balances. The fees imposed for using national ATM systems are set by the individual networks and range from $0.75 to $1.30 per transaction. A portion of the fee goes to the financial institution whose machine is being used, and a portion goes to the organization running the system.

Not all ATM systems are run by banking organizations. With the advent of regional and national ATM networks, ownership of these networks by third parties has become a major business. The systems operate in two ways: the third-party company can own, deploy, and operate the ATM network, with the financial organization paying a transaction fee each time its customers use the machine, or the third party can be the switch operator, receiving either a percentage of the transaction fee or a fixed monthly fee for its processing efforts. These systems are developed on a local, regional, and national basis and are in direct competition with bank-run systems.

Safeway—an Oakland, Calif., supermarket chain—has announced plans to develop and market a national ATM network. Presently, Safeway participates in a shared interchange network, owned and operated by the Network Exchange of metropolitan Washington, D.C. The objective of the Safeway program for in-store ATMs is to increase store traffic and sales by providing customers with full-service, one-stop shopping convenience. Safeway has committed to installing common-access ATMs in key stores throughout California. The Washington, D.C., program, however, is presently not a participant of the Safeway ATM program being developed in Oakland. To attract the maximum number of prospective shoppers, Safeway will promote both the availability of the ATM services at its stores and the financial institution cards that can access the machines. Safeway is also prepared to assist the participating financial institutions in generating new accounts that can access the in-store ATM services.

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[10] Norman Penny and Donald Baker, *The Law of Electronic Funds Transfer Systems*, (Boston, Mass.: Warren, Gorham & Lamont, year), p. 6.03.

*Reciprocity agreements exist among several States. The Massachusetts Legislature passed a bill in 1983 entitled "An Act Relative to Branch Offices and Acquisitions of Financial Institutions," that permits interstate deployment of ATMs and deposit-taking among five New England States.

Participation in the program is on a transaction-fee basis. National Transaction Systems, Inc. (NTSI), will provide ATMs; install, maintain, and service them; and perform all required transaction processing, funds transfer, settlement accounting, billing, and customer service operations required to support the Safeway ATM program. Safeway cash machines will be linked to NTSI's switching and processing system via leased telephone data circuit. Other leased data circuits will link the switch with the participating institutions' host computers. Initially, the only function available will be cash dispensing, selected by the financial institutions from the following three service-level options:

1. *Direct host link*. The participating institution's computer is linked directly to the NTSI switching processor. The institution pays for the dedicated data circuit and modems associated with its host computer link to the NTSI switch.
2. *Direct host link with "stand-in" processing.* NTSI maintains a cardholder authorization file and control parameters on the NTSI computer for processing the participating financial institution's cardholder Safeway Cash Machine withdrawal transactions when the institution's host computer is not available. In addition to the dedicated data circuit and modems, the institution pays a service fee for the stand-in processing option.
3. *Full stand-in processing.* NTSI maintains the participating institution's cardholder file online at NTSI. NTSI verifies the cardholder's personal identification number and authorizes or denies the cardholder's Safeway Cash Machine transaction in accordance with the institution's authorization parameters and cardholder positive file information, updated daily by the institution's processor. The institution pays an additional service fee for this stand-in processing option.

Merrill Lynch, Pierce, Fenner, & Smith Inc., has signed an agreement with Safeway Stores, Inc., that will enable the brokerage concern's customers to tie into the Safeway ATM network. Merrill Lynch customers who have one of its Cash Management Accounts, which link a securities account and money market funds with "check" writing privileges and a VISA card, can use the VISA card to obtain cash at Safeway stores. This is expected to begin in early March 1984; it will be limited, for the present time, to California locations. However, Merrill Lynch expects to expand the services to include nationwide access.

In Florida, Publix supermarkets has also established its own ATM network, which it offers for use to any bank in the State (operated on a piggyback basis). Fees are imposed for every transaction a customer makes at a Publix terminal. In addition to deploying the ATM, Publix also runs the switch that operates the system.

Shared systems exist primarily on a local/regional basis. The Tyme Corp. of Wisconsin has operated as one of the first shared systems in the United States, and in Washington, D.C., the Money Exchange has operated as one of the first shared networks on an interstate basis. Shared/interchange systems allow the small institution to compete with other financial institutions in the ATM competition. The feasibility of all financial institutions operating switches and deploying ATMs within a contained area is uneconomical. By operating in a shared/interchange environment, the financial institution can extend the geographic reach of its market and earn income from the ATM.

CIRRUS—National ATM Network

The CIRRUS System, Inc., is a not-for-profit membership corporation that allows its members to offer their customers the convenience of nationwide ATM access. Incorporated in June 1982, CIRRUS is headquartered in Oak Brook, Ill. When fully operational, it will serve 41 States. Growth projections for the system are summarized in table 5.

Membership in CIRRUS is exclusively reserved for banks, savings and loans, and credit unions. Associate membership is limited to banks. CIRRUS does not preclude its members from joining other networks, nor does it require the sharing of other electronic services, such as POS terminals. There are three classes of membership for the CIRRUS System:

1. *Principal.* Principal members have exclusive marketing rights in their territories. They may share their link to the CIRRUS switch, run by the National Bank of Detroit, by licensing correspondent members. Principal members are required to add their ATMs to the network.
2. *Associate.* Associate members also have a direct link to the CIRRUS switch and may share their connection with the correspondent members they license.
3. *Correspondent.* Correspondent members are linked to the CIRRUS switch through the principal or associate members who license them.

CIRRUS allows its members to offer their customers the convenience of nationwide ATM access. Using a CIRRUS card at an ATM deployed by any CIRRUS member, a customer can make a withdrawal from his savings or checking account, check balances, and access a line of credit. All CIRRUS ATMs must accept the cards of every CIRRUS member; however, individual members may set limits on the amount of cash their customers may withdraw at a time. CIRRUS ATMs must also be online in order to authorize transactions. The CIRRUS switch, maintained by the National Bank of Detroit, does not provide backup authorizations for its members. The network ensures against switching downtime by utilizing an ACI/Tandem computer.

Individual CIRRUS members are responsible for the cost of hooking up to the switch and maintaining the connection. They must also pay for hardware and software modifications necessary to comply with the network's operating rules.

Associate members pay a one-time entrance fee of $25,000 to join the network, connect with the switch, and reserve the right to license correspondent members. Correspondent members' entrance fees are set by agreement with the licensing banks. Ongoing membership fees for the CIRRUS System are $2,500 per month for associate members; correspondent members pay the membership fees set by their licensing bank. There are also processing and interchange fees. Each time a CIRRUS cardholder uses his ATM card at a bank other than his own, the card issuer pays the switch $0.25 for processing the transaction. For withdrawals and for accessing a line of credit, the card issuer also pays the institution deploying the ATM an additional $0.50 interchange fee per transaction. For balance inquiries and other transactions, the card issuer pays the machine-deploying institution a $0.25 interchange fee.

Table 5.—Growth Projections for the CIRRUS System, Inc., National ATM Network

	1982	1983	1984	1985
Number of CIRRUS participants	682	862	1,760	2,297
Number of CIRRUS ATMs deployed	3,364	5,015	7,210	8,839
Number of CIRRUS cardholders	14,600,000	18,000,000	28,900,000	32,700,000

SOURCE: The CIRRUS System, Inc.

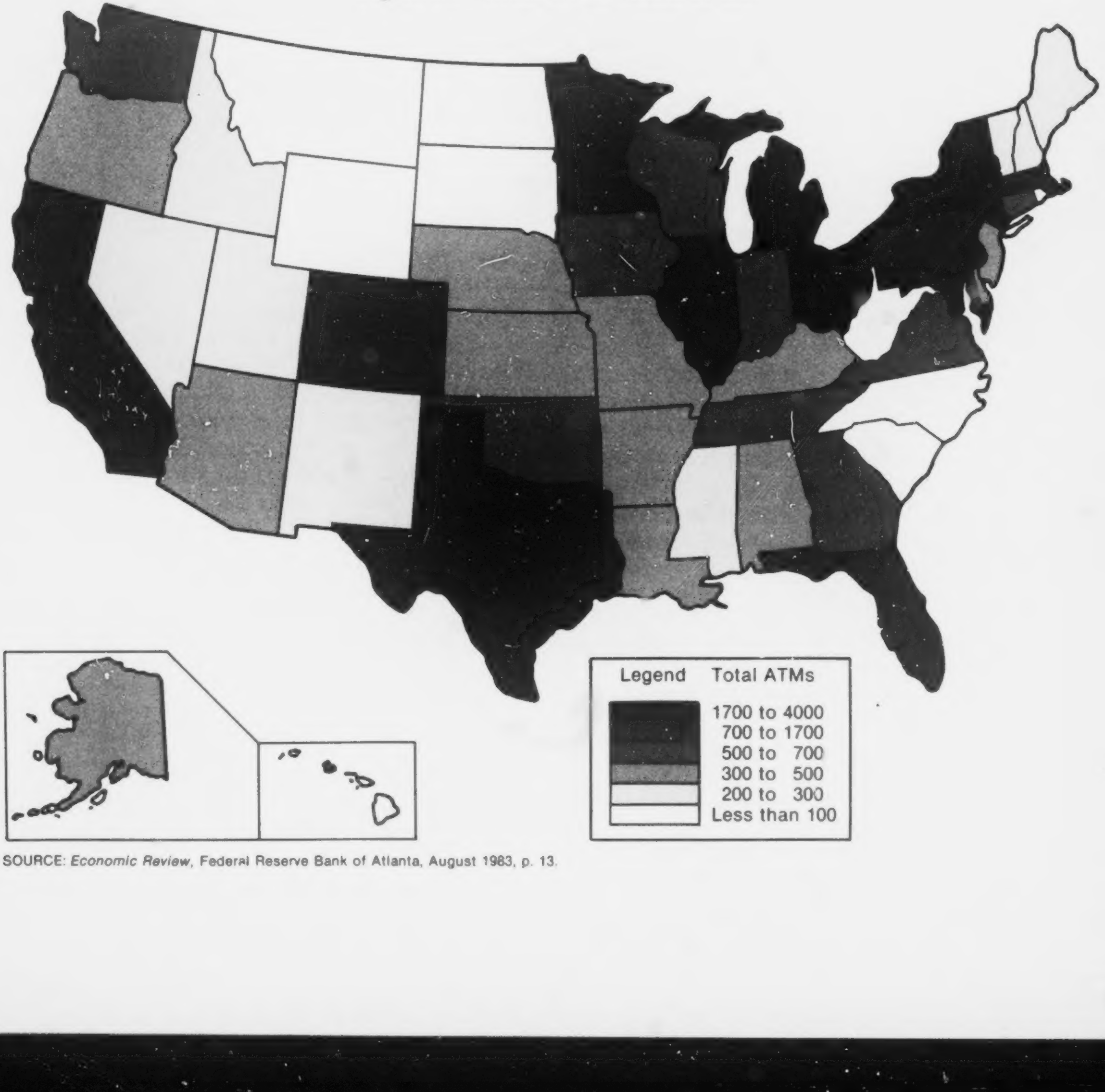
ATM-deploying institutions earn revenue from interchange fees every time another institution's cardholder uses their machines to transact banking business. Card-issuing institutions are permitted to charge their customers for the privilege of being linked to the CIRRUS network. Associate members can share their direct link to the CIRRUS switch with other institutions for a fee, and no matter how many correspondents an associate signs up, it never has to pay more than its flat monthly membership fee. Members of the CIRRUS network are free to join other networks.

When fully operational, CIRRUS will link over 5,200 ATMs serving over 16 million customers. The national ATM switch is designed to handle at least two transactions per second. This represents a daily capacity of 173,000 transactions.[11]

ATM Deployment Legislation

Deployment of ATMs remains dependent on State-by-State banking legislation. Figure 10 shows the number of ATMs in each of the States in 1983. Certain States, such as Illinois, have very strict, off-premise deployment laws. Illinois permits State-chartered banks to establish ATMs subject to a number of geographic, time, and number restrictions. First,

Figure 10.—ATMs in the United States



SOURCE: *Economic Review*, Federal Reserve Bank of Atlanta, August 1983, p. 13.

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[11] CIRRUS Systems, Inc., Oak Brook, Ill.

prior to January 1, 1980, a bank may establish not more than two ATMs, each no more than 3,500 yards from its main office. Second, commencing January 1, 1980, a bank may establish an additional eight ATMs, at the rate of two per year. Third, prior to January 1, 1981, these ATMs may be located only within the county of a bank's main office. Finally, subsequent to January 1, 1981, a maximum of four of the eight ATMs may be located within an adjacent county. ATMs located not more than 3,500 yards from the bank's premises need not be shared, but those located more than 3,500 yards from the bank's main premises must be made available on a nondiscriminatory basis for use by customers of any other bank that would be permitted (under the statutory geographic restrictions) to establish an ATM at that particular location.[12]

In sharp contrast to the restrictive Illinois law is Wisconsin legislation on terminal deployment and usage:

> Facilities established under the Wisconsin EFT statutory provisions must be available on a nondiscriminatory basis for use by any like institution which has its principal place of business in the State, or by any other like institution which obtains the consent of a like State, or by a national institution which has its principal place of business in the State and which is using the terminal.

The statute requires that regulations prohibit, with regard to a shared terminal, any advertising that suggests or implies exclusive ownership or control of the terminal by a financial institution or group of institutions.[13] Wisconsin law made possible the first shared ATM network in the United States and one of the largest.

Massachusetts went one step further. In early 1983 a law was passed that, for the first time, permits Massachusetts financial institutions to link their ATMs to regional and national interchanges. Entitled "An Act Relative to Branch Offices and Acquisitions of Financial Institutions," the act establishes new authority for mergers, branching, electronic branching, and mortgage lending by Massachusetts financial institutions. While the act is generally limited in its operation to activities involving five New England States, the EFT provisions are expressly exempted from such limitations. Under prior law, no out-of-State financial institution nor bank holding company was permitted to purchase, establish, install, lease, use, or share an ATM in Massachusetts. The sole exception was allowed in a grandfather clause that exempted from the prohibition certain electronic branches established before December 31, 1981. To qualify for the exception, the ATM had to dispense only cash, traveler's checks, or both, and had to be limited solely to the use of customers of the financial institution that established it.

The new law empowers Massachusetts institutions to link their ATMs to regional or national networks. It also permits a financial institution, organization, or bank holding company, or its subsidiary organized outside of Massachusetts, to share any ATM established and used by a Massachusetts financial institution or organization, provided that the sharing entity limits its customers to cash withdrawals, advances against preauthorized lines of credit, and check cashing. Moreover, any out-of-State nondepository financial institution that establishes electronic branches that dispense only traveler's checks and are limited to use by the nondepository's own customers, such as American Express's Express Cash Program, are allowed to establish, use, or share electronic branches in Massachusetts.

Finally, the new law authorizes financial institutions, organizations, and bank holding companies in Connecticut, Maine, New Hampshire, Rhode Island, and Vermont to purchase, establish, install, operate, lease, or use electronic branches. That is, whereas the prior law permitted institutions from any State to share ATMs established and used by Massachusetts institutions, the new law allows New England institutions themselves to establish and use ATMs in Massachusetts, whether or not a

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[12] Robert C. Zimmer and Theresa A. Einhorn, *The Law of Electronic Funds Transfer*, Card Services, Inc., 1980, pp. I 1-11 to I 1-13.

[13] Ibid., p. WI-1.

Massachusetts institution is involved.[14] All of the participating States passed legislation approving the interstate branching.

There are no uniform guidelines on ATM deployment that each State follows in making its EFT deployment laws. Each State's legislature determines what approach will be best for the consumer and the banking community.

POS Full Funds Transfer

The term "point of sale" covers a variety of services rendered through machines located at retail establishments. POS terminals are generally clerk-operated devices located at the checkout or convenience counter of retail establishments. Electronic cash register versions of these terminals have been in operation for several years, maintaining store records on sales, inventories, accounts receivable, and the like. Now, POS devices have been linked to financial institution computers, allowing retail customers to receive approval for check cashing and electronically initiate transfers from their accounts to the retailer's, the latter being POS full funds transfer. In some installations, customers can make deposits to their accounts. POS devices accept either a plastic credit card or a plastic debit card, depending on whether the customer wants to delay payment by charging the purchase or wants the purchase deducted directly from his/her account. As electronic POS systems proliferate, their use will probably replace many of the paper transactions accomplished through cash payments and check and credit transactions.

The debit card, another means of facilitating funds transfer at point of sale, functions much the same way a credit card functions except that when the transaction is received by the issuing financial institution, it is debited to the cardholder's account, which may be a checking, savings, NOW, or other form of depository account. Some securities firms have distributed debit cards to access cash management funds. The card may also have an overdraft credit line. There has been much customer resistance to using a debit card at the point of sale because the customer associates the use of a plastic card with the elimination of float, which allows a grace period before actual payment is required. Also, many people in the industry have referred to the debit card as a paperless check, which is one of the reasons that retailers have been reluctant to accept it. Presently, retailers can accept accept and process checks for less than the fee imposed for processing a debit or credit card transaction. These differences have resulted in controversy between the retailer and card-issuing institutions.

Another form of debit card transaction at point of sale gives the cardholder a rebate, which encourages use of direct debit at point of sale. Customers use the card, which works online, to debit their account directly to any participating retailer. The retailer receives instant credit, and the customer receives a rebate, ranging anywhere from 2 to 5 percent, directly credited to his savings account. One of the most successful of these programs is that of the Wilmington (Delaware) Savings Fund Society. Most of the other programs, however, have been unsuccessful. First of all, a significant card base was not represented. Second, many of the stores that signed up for the program were inconvenient to the majority of the cardholders, and these stores also tended to sell products at a higher cost than did discount stores.

Direct Debit POS

Retail Stores.—Although previously not many POS systems operated in retail stores, there is tremendous potential for their use. One of the most successful direct debit POS programs is in Des Moines, Iowa. There, Dahls and Hy-Vee supermarkets operate direct debit POS systems at the checkout counter, the first such systems in the United States. Customers of these supermarkets can pay for groceries with a proprietary debit card issued by Norwest Bank, which automatically debits the cardholder's account. ITS, Inc., operates the computer switch that makes EFT possible for some of the 205 participating Iowa banks, savings and loans, and credit unions. The Hy-Vee supermarket does about 4,000 POS transactions per month; Dahl's does about 2,000 per month. Each location paid about $18,000 to install magnetic stripe readers and keyboard add-ons to the NCR cash registers and to buy the processors and software. However, volume sales of the systems should cut costs. Moreover, the store receives good funds the next day.

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[14] Electronic Funds Transfer Association, *Washington Report*, Jan. 11, 1983.

Retailers and banks both benefit by having access to the customer's float, and both the retailer and the bank are assured the funds are good. "To encourage direct debit use, bankers will price check transactions higher than their debit card counterparts to nudge consumers along. The cost of processing one check is estimated at about 50¢, and an EFT transaction costs about 30¢. The higher the volume in EFT, the lower the per transaction cost because of the high fixed overhead."[15]

Oil and Gas Companies.—The gasoline station is currently the focus of much POS activity because it generates more transaction volume than any other kind of retailer.[16] Many large oil and gas companies are installing POS terminals at service stations. A few direct debit POS terminals are being deployed directly into the gas pumps, although the majority are stand-alone terminals.

While still in its infancy, the idea of deploying POS terminals at service stations is becoming more accepted because of the increase in self-service gas stations, because more stations are remaining open 24 hours a day, and because service stations are often vulnerable to robberies. To help reduce the tremendous volume of cash generated each week by gasoline purchases, major oil companies and banks across the country are joining forces to test POS terminals at the pumps, using proprietary credit cards or bank debit cards as an alternative method of payment. Most of the tests at the service station involve agreements between oil companies and financial institutions under which customers can pay for purchases using bank debit cards that automatically debit the amount of purchase from their checking accounts. However, there is additional interest in proprietary credit card transactions at points of sale. Mobil Oil Co., for example, has 2,400 POS terminals linked to its Kansas City processing center, which captures all transaction information via electronic draft capture. Since the system is online the information is transmitted immediately. This POS system enables Mobil to capture billing information electronically, saving internal costs by reducing the amount of paper used in such transactions. Mobil implemented a credit POS system, which could easily convert to a hybrid system supporting both debit and credit, to maintain its loyal customer base and to generate new business. Mobil representatives feel that direct debit at this stage would alienate customers.

The POS transaction begins by the service station clerk inserting the card into a POS terminal. In some cases, the customer inserts the card into an automated pump and then keys in his own personal identification number (PIN). By implementing direct debit POS terminals, the customer's account is automatically debited, and the retailer's account is generally credited immediately or the next day. The benefits to both banks and oil companies are savings of millions of dollars. In most cases, the bank or network operator receives a transaction fee for each purchase. The oil company saves by being assured of good funds and by receiving payment immediately. This is a significant issue because the general lag time for credit card sales draft, according to a Mobil Oil Co. official, is 10 days.

Some POS test situations currently under way are being done by AmeriTrust Bank, Shell Oil, and Gastown in Cleveland, Wells Fargo Bank and Shell service stations in San Francisco, First City National Bank of Houston and Exxon Co.

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[15] *Forbes*, Aug. 29, 1983, p. 46.

[16] *Management Information Systems Week*, July 27, 1983, p. 81.

National POS Systems

Large-scale communication networks are being developed, primarily by the major credit card industry, to connect thousands of POS retail terminals with financial institutions within a State, region, and, ultimately, the Nation. These networks will include computerized switching centers and a base for clearing settlements.

In addition, oil companies, banks, and other retailers are considering national POS networks. Tests are being conducted by Liberty National Bank & Trust Co. of Oklahoma City and a Southwest oil dealer whereby terminals will be deployed at stations offering the following services: automated dispensing at the pump, an ATM inside the station for purchasing convenience items, and a commercial depository that is wired to the ATM so that high-volume stations can make deposits.

At the present time, POS systems are being allowed by regulators to access time and savings accounts; however, this could change. Regulation D* is not being strictly interpreted with respect to POS activity. However, if the regulation were strictly interpreted, a large number of financial institutions, savings and loans, and savings banks, would be prohibited from actively participating in a POS system.

Other Uses of POS Systems

The POS terminal can also be used for check authorization, permitting the customer to obtain approval of a check for payment by running a verification of the check-cashing record through a computer. Likewise, the POS system enables merchants to verify the availability of funds in a customer's account or his access to credit before completing the sale. As with ATMs, customer access to POS terminals is usually by plastic card and PIN. This is an alternative to manual authorization and verification, which is handled by accessing a negative file or by having the retailer check a manual that lists card numbers of bad credit risks.

In the United States, POS experiments have been conducted since 1974. Very few systems involving instant transfer have survived, and the most important functions of POS, until online direct debit systems were in place, have been check verification and credit card authorization. One explanation for this very limited success could be that the experiments have generally looked for evidence of profitability within a few months of installation, whereas the change in social habits involved in moving from cash and checks to instant transfer takes a great deal longer.

Costs of POS Systems

For several years merchants and financial institutions have been at an impasse over how to implement electronic payment systems, especially retail EFT systems. The differing perspectives reflect differences in technologies being used, in terminal ownership, in customer bases, and in approaches in pricing the service.

One of the main concerns associated with implementing POS systems is the cost to be borne by retailers and banks. Another is the concern about merchant discount fees. Most banks charge the merchant the same fee for debit card transactions as they do for credit card transactions. The argument made by the merchant is that debit cards function in lieu of a paper check and therefore the merchant should not pay the same discount fee. A POS system can all but eliminate float, reduce credit risks, require the merchant to keep less cash on hand, and ease check approval.

Technology has also been a basis for conflict between the merchants and POS operators. Financial institutions typically base their debit cards on the magnetic stripe technology used for years on bank credit cards. Grocery retailers, on the other hand, typically base their technology on an optical scanner that reads bar codes on product labels and transmits the information to an electronic cash register (ECR). Department stores typically prefer optical character recognition characters read from merchandise tags and proprietary credit cards with a handheld wand. Product and customer information is fed into an ECR to effect electronic payments.

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*Regulation D is a uniform reserve requirement on all depository institutions with transaction accounts or on personal time deposits. It requires submitting reports on all deposits to the Federal Reserve Board and sets phase-in schedules for reserve requirements.

Financial institutions tend to prefer owning the necessary terminals and charging merchants a user's fee for making transactions through them. On the other hand, retailers tend to prefer devices that are integral components of their own ECRs.[17] Naturally, financial institutions and the merchants are wedded to their respective investments. It is unrealistic to expect the merchants to give up their technology in order to accept electronic payments. Developments such as VISA's "electron card" are aimed at simplifying this problem.

Another issue with respect to POS systems is the volume of sales to be handled. It has been argued that to be viable economically, the POS system must become competitive with cash; otherwise, there is no incentive for the retailer or the customer to use it. The customer is faced with loss of float, and the retailer is faced with transaction fees, which cash payments do not require. Under these conditions, systems that are shared among all the banks in an area and that provide for the recruitment of most retail outlets stand the greatest chance of success.

POS systems will undoubtedly increase during the next decade, with many new systems being built upon existing ATM networks. Both the banks and retailers stand to gain from the resulting reduction in the volume of paper transfers. However, merchants contend that since a debit card transaction saves financial institutions time and money relative to a check transaction, merchants should enjoy some of the savings. It has become quite apparent that in order for POS systems to develop and operate efficiently, the systems must be designed in close cooperation with the individual retailers, not just the markets the systems serve.

The technology necessary to operate electronic debit and facilitate POS transactions exists today. It is the intention that electronic debit cards will substitute for check, credit card, and cash transactions. However, when POS services become commonplace, the use of cash and checks as a payment mechanism will still exist. Disconcerting cost trends are leading merchants and financial institutions to seek lower cost alternatives for POS transactions. EFT is the method by which this goal can be reached.

Financial Information Services

There are many forms of information services in the financial service industry. They include check or credit authorization/verification; status information on account balances; identification verification; billing and funds due information (e.g., preauthorized payments); accounting information with respect to general ledger, payroll, accounts payable, accounts receivable; and modeling and analytical services, such as Chase Econometrics and Wharton Econometrics, which provide access to data bases, econometric models and modeling tools, and various other analytical packages.

All financial service providers use information services. Retailers are perhaps one of the largest users of specific information services, particularly check verification. Check verification validates the authenticity of the check or its presenter. This system is accessed online through a telephone or terminal by the retailer. The retailer pays for this service, generally a percentage of the value of the check. These systems are run by third-party organizations and banks that maintain negative files.

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[17] "Debit Cards at the Cross Roads," *Economic Review*, March 1983, pp. 37-38.

Check Authorization

Check authorization systems may be provided and maintained by the party accepting the check, by a financial institution, or by a third party engaged in such a business. The systems may be designed to access bank records directly or may rely on secondary data sources. In some systems, check approval is accompanied by a guarantee of payment. In an EFT system, a customer's plastic card and PIN can be used to access the system and verify the available balance. This is accomplished by placing the check into a terminal and keying in the appropriate information. The check is then validated and accepted at point of sale.

Credit Authorization

Credit authorization is yet another information service vehicle available to the retailer. It operates by allowing the customer's credit card to be read by a financial service terminal while a central computer verifies that the card is valid and the customer's account has sufficient funds. This can also be accomplished manually by checking a printed document, distributed by the card companies, indicating lost or stolen card numbers or by placing a call to an operator who will authorize or refuse the transaction based on information from a data base. This inquiry process is supposed to reduce the risk of credit fraud or of extending credit in excess of an imposed credit limit.

Information service systems allow for realtime access and reduction of risk at point of sale and ensure that the retailer will receive the funds. The risk is transferred to the party authorizing the funds. This service guarantees payment to the retailer and is attractive despite the fact that the retailer must pay a premium to insure the funds.

Providers of Information Services

Many kinds of organizations are information providers. Depository institutions use and provide information in unique ways. For example, the services they perform include providing status information to their customers on a very regular basis. The most familiar processes are inquiry of account balances or funds credited or inquiries regarding specific check clearing. Today, much of the status inquiry information is processed by online teller terminals with direct access to the accounts being questioned.

Service organizations provide accounting information services to customers, such as information services about payroll or accounts receivable/payable or other services necessary for efficiently running the organization without the added costs of implementing an automated system in-house. A wide variety of firms, including financial service providers, offers these services.

Two other key information service providers in the financial service industry are investment brokers and insurance firms. (The brokerage industry is covered in ch. 3 of this report.) Insurance information is compiled by actuarial scientists and categorized by risk, age, and the like. Much of this information is available to individual brokers through online videotex terminals. Insurance information requires some customization in order to meet the specific needs of the party requesting the insurance, although premiums and risk are determined by actuarial methods.

The information provider in the insurance industry is the insurance salesman. Although much information about general insurance is accessed to data bases via terminals, the processing of this information still requires the personal interaction of the salesman and client to provide the service adequately. Some insurance information is provided through computer/CRT* terminals that display rates and also give an explanation of the types of insurance available. The insurance industry is looking at further automating the delivery of insurance information.

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*CRT terminal—Video terminals that display data on a cathode-ray tube.

The following scenario may present itself in the near future. Through videotex and home information systems, insurance information can be transmitted and reviewed by an individual. If the need presented itself, for example, an individual would be able to increase the amount of homeowner's insurance for a specific period of time, say a weekend, if he planned to be out of town. The insurance policy modifications could be done instantaneously, and the additional premium payment could be automatically debited from the cash value of other insurance policies.

Several of the larger banks in the United States offer financial, securities, and investment analyses; payment products, models and data bases to corporations, other banks, insurance companies, financial institutions, and government agencies. An example is terminal-based cash management for major corporations and banks.

Mortgage servicing is another aspect of financial information services. Mortgage bankers and a growing number of commercial, mutual savings bank, and savings and loan customers use this type of service for servicing their portfolios of mortgage loans, which include taxes, escrows, and insurance. Loan closing documentation and mortgage preparation systems are available to help customers of the service keep track of inventories and financial commitment needs. Batch transmission and inquiry modes to a central location are used via dial-up and leased transmission lines. In this manner, nationwide service is provided from a single location.[18]

Information services provide immediate access to financial information and are used to transfer funds efficiently from one account to another. For example, in a corporate environment, real-time access and videotex technology allows a treasurer or financial advisor to manage and control all of the investment accounts. Through the same technology, investments can be transferred on a daily or perhaps even hourly basis.

Many organizations today conduct financial counseling programs for all ages and groups. These groups organize to seek sound financial guidance and to plan for long-range money goals. Interestingly, these groups include not only the affluent market but also young professionals and middle-income individuals who have become far more educated and concerned about how their finances are handled.

Different sectors of the financial service industry require different information services. For example, a bank loan officer may inventory data to assess liquidity and solvency. Financial analysts are concerned with equity investment decisions and are likely to place more importance on earnings-per-share and capital account data. On the other hand, various financial service groups use the same information in different ways in the decision process.

Service industries, such as banking, securities, and insurance, whose business operations rely heavily on information services, are finding that the whole environment in which they operate is changing rapidly. Earlier developments in information technology were such that only large corporations could take advantage of its capabilities. However, over the last several years, technical innovation has continued at such a rapid pace that, for example, information processing power, which once took a roomful of large equipment, is now available in portable machinery.

Home Information Systems

Home information services are a way by which financial information services can be delivered to users of home computer terminals. Home information systems (HIS) started in a relatively minor way in the United States several years ago with the introduction of bill paying by telephone. The original impetus came from thrift institutions, which saw telephone bill payment as a way to offer transaction accounts, thereby partially circumventing the law forbidding payment of interest on demand deposits. Soon commercial banks began offering the service. When the telephone bill payment service was first introduced, most of the systems required the customer to call in and give oral instructions over the telephone to an operator to perform banking services, specifically bill payment. Automation was introduced and made available to customers with touch-tone phones, although most systems still relied on operators during the business hours and on recorded messages at other times. Telephone bill paying services did not attract a large customer base, and many of the early programs have come to a halt.

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[18] Herbert A. Schulke, Jr., "Electronic Financial Systems," *Innovations in Telecommunications*, Academic Press, Inc., 1982, p. 1038.

Technology of Home Information Services

The introduction of videotex played a key role in the development of home information systems. Videotex—a generic term that refers to computer-based information retrieval systems that display text and graphics via video screen—is a product of the convergence of telecommunications and computing technologies. Through teletex* and videotex, one-way and two-way computer-based retrieval systems, information can be widely disseminated for viewing on modified television sets or on personal computers. In the last year or so, full videotex systems have become operational in several countries, giving the user the ability to send communications to the system computer for onward transmission. Because the videotex system is interactive, it can be used to facilitate financial transactions. The system functions in several ways. One way uses a videotex terminal and a television (which acts as a visual display unit); the communication with the system is supplied by telephone lines or cable lines. Some systems provide a hybrid communication delivery, using cable for incoming information and the telephone for outgoing information. In-place cable lines are primarily one-way communication lines, although most new cable lines being laid today are two-way cable lines.

Home computers also allow interaction with HIS and are becoming popular for receiving the services. A modem** can be used to tie the home computer to the information source by telephone lines. A CRT or television screen acts as the visual display terminal. The home banking software which runs the system is distributed by the participating financial institution.

As stated, cable plays an increasing role in the delivery of home information services. "The latest cable television systems now being developed will transform the technology of videotex and the economics of home banking. The use of coaxial or fiber optic cables gives much greater bandwidth, which provides three substantial technical advantages: 1) the possibility of carrying a large number of channels, up to 100 or more; 2) a more satisfactory and speedy interactive facility; and 3) a much improved ability to produce pictures (important in using home shopping)."[19] Direct broadcasting by satellite, which is being developed, is another method by which information can be transmitted into the home.

Developers of Home Information Systems

Home information systems are being developed by a myriad of organizations that include depository institutions (presently Bank of America and Chemical Bank are marketing systems that are up and running), information companies, entertainment companies, and the like. Several systems are being developed as cosponsored, joint ventures by consortia of major banks and corporations. One example of a major project is the Viewtron Program in Miami, Fla. The Viewtron system will be supported by computers from seven major corporations from around the country and will be linked to Viewdata Corp.'s Viewtron computers in Miami. The gateways are American Express—subscribers will have access to a variety of services offered by this company; Commodity News Services—subscribers will be provided with instant and delayed stock market and commodity price quotations; and E. F. Hutton—subscribers will be able to track their personal investments and receive investment advice with "Huttonline," the first electronic information service offered by a retail brokerage house. E. F. Hutton customers will be able to access Hutton's computers in New York City for information about their accounts, such as cash management and margin balances, portfolio positions and market values, open orders, and recent transactions. All Viewtron subscribers will be able to order E. F. Hutton market comments and investment advice and send electronic mail to E. F. Hutton offices. Viewtron subscribers will also be able to order J. C. Penney catalog merchandise by using a direct link to J. C. Penney computers in Atlanta. They will receive online order confirmation upon completion of their order. If the requested item is not available in the color requested, the J. C. Penney computer will offer the Viewtron subscriber other color possibilities. The J. C. Penney catalog inventory system is immediately and automatically updated. In addition to processing the catalog order, the gateway to J. C. Penney will also provide for credit authorization for the J. C. Penney card, as well as for VISA and MasterCard. In addition, information from *The Official Airline Guide* and *Grolier Academic American Encylopedia* will also be available.

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*Teletex is a one-way system that displays alphabetic and graphic information on a modified television set. Videotex displays the same sorts of information as teletex but also provides a communication path for the user to interact with the service provider.

**A modem transmits digital or computer information over telephone lines by manipulating it electronically and also protects the lines from undesirable signals that might cause interference with other users.

[19] Revell, op. cit., p. 50.

The financial gateway to the system, VideoFinancial Services, is jointly owned by four major bank holding companies: Southeast Banking Corp., Miami; Wachovia Corp., Winston-Salem, N.C.; Banc One Corp., Columbus, Ohio; and Security Pacific Corp., Los Angeles, Calif.

Applause, the home banking software offered by VideoFinancial Services, will supply a variety of services. The home banking activities include bill payment, funds transfer and account information, and special financial requests. VideoFinancial Services also provides credit authorization and settlement for credit card shopping orders placed on Viewtron. The system permits each participating financial organization to specify unique features within the system standard, including the use of individual colors and graphics. Presently, 12 Florida banks and savings and loans will provide home banking to Viewtron subscribers via VideoFinancial Services' computers in Orlando, Fla.

As a financial gateway, VideoFinancial proposes to provide the Applause service to all sections of the country through any videotex network. To support such an objective, VideoFinancial expects to establish regional data centers, where practical and necessary, to interconnect the financial industry to the regional network operator. The system will be streamlined. First, the home terminals will tie directly to the network operator, who will be fully responsible for promoting, enrolling, and billing the consumer for the network service. Communications, terminals, and data base management will be provided and managed by the service provider. The network will then feed into the VideoFinancial computer system. VideoFinancial will either connect online with or provide batch processing for subscribing financial organizations and will be responsible for developing and maintaining the home banking software package. The VideoFinancial computer system will tie in directly to the financial organizations offering the service. These financial institutions will assist the network operator in enrolling the consumer and will provide the data to VideoFinancial to support the home terminal request.

Over 50 information providers, including major wire services, educational organizations, reference and financial book publishers, universities, libraries, and professional organizations provide information for Viewtron.

Interestingly, the advent of HIS has encouraged cooperation instead of competition among the various financial service providers.

Costs of Home Information Systems

Cost is one of the major issues associated with the success of the HIS program. The Viewtron videotex costs are as follows:

- Subscription to the Viewtron service: $12 per month for access to nearly all Viewtron services.
- Communication charges to access Viewtron: approximately $14 per month (approximately $1 per hour to access Viewtron).

A serious consideration is the influence of local communication costs and their impact on HIS. It is possible that communication costs could increase to such a degree that the cost of making a local call discourages use or forces development of new types of local links.

Consumer acceptance of home banking/home information systems will be based on several other factors besides the natural inclination toward using these services. These factors include price of obtaining the hardware/software needed to use these services, price of using the services, and availability of these services.*

The Market for Home Information Systems

Much speculation has been associated with the home information market. Several leading authorities have targeted the affluent segment of the population as the major users of the home terminal. Their claim is that many consumers with incomes over $40,000 per year have an insatiable need for information of various types. The home terminal has great potential as the major investment, shopping, and news information source for affluent consumers. Additionally, it has been stated that many affluent consumers feel strongly that they can conduct their own financial transactions better than bank personnel can, and some find it enjoyable.

Systems now in operation serve interactive facilities, providing travel services, sports, and general entertainment information (e.g., restaurant and movie guides); stock exchange information; shopping capabilities; and banking applications in a form similar to that of self-service banking. Users of these systems can pay bills, transfer funds, check balances, review banking statements, and keep up-to-date financial records.

The elderly may be another target market for such systems. The ease of being able to accomplish shopping and banking from the home, it seems, would be very appealing. There are problems, however, with respect to acceptance of the system, hardware and communication costs, and, most importantly, changing behavior patterns. Principal characteristics of HIS users are listed in table 6.

For consumers to adopt and use home information innovation, it must be associated with such advantages as convenience, compatibility, or specificity.

Implications of Home Information Systems

It appears likely that home banking systems will be tied to other services such as information services, entertainment, and even business uses. Also, any institution, whether financial or nonfinancial, will be in a position to provide financial services through a videotex network and to support these services in much the same way as Merrill Lynch operates its cash management accounts.

Home banking and its impact on branch banking has some major consequences. With a single investment in a computer installation, a new entrant to the retail banking market has the whole national market open to it. As long as it has the necessary computing capacity to handle the accounts of its customers, any bank will be able to leap over geographic barriers and offer payment services nationwide.* By the same token, nonbank operators will be able

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*Information from Reistad Corp.—research conclusions.

*Banks have long been able to conduct business nationwide by opening offices (usually via holding company affiliates or subsidiary corporations) for business loans. This is also true for mortgage companies and consumer finance companies.

Table 6.—Principal Characteristics of HIS Users

Characteristic	Level of importance	Comments
Age	High	Research studies indicate most potential customers of HIS/home banking can be clearly identified by age. Two principal groups are 18-34 and 35-49.
Sex	Low	Research indicates sex is not an identifier for potential cusomers of HIS/home banking. Men and women rank about equally in intent to purchase. PRONTO pilot research shows, however, men were more frequent users.
Education	Moderate	Research indicates as the level of education increases, the propensity to purchase HIS/home banking increases. In all studies the majority who are interested in HIS have attained a college degree or higher.
Occupation	Low	Research indicates interest in HIS/home banking is not dependent on occupation. Blue collar workers and professional alike are likely to be interested in HIS. Interest increases gradually from a lower level among housewives to high levels among managerial employees. Those working in the home or retired are less likely to be interested.
Family status	Low	Research indicates married and not married, with family or without, are equally likely to be interested in HIS/home banking.
Income	Moderate to high	Research indicates as income increases, the likelihood of interest in HIS/home banking increases. However, among very high income households ($50,000/year and up) the likelihood of interest in home banking declines somewhat.
Financial services users	Moderate	Research indicates that users of ATMs, Telephone Bill Paying, and frequent check writers are more likely to be interested in HIS. However, a substantial number of those interested do not use these services.
Electronic communication product users	Moderate	Research indicates personal computer owners, cable TV subscribers and those attracted by electronic gadgetry are somewhat more likely to be interested in HIS. However, a large portion of those interested in HIS do not own or intend to purchase a personal computer. Among PRONTO pilot users, half had computer terminals (outside the home) prior to participating in the test.

SOURCE: The Reistad Corp., Clearwater, Fla.

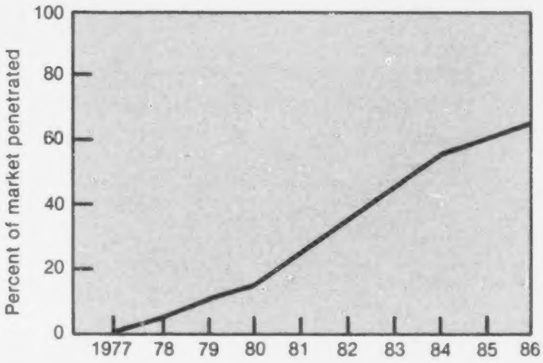
to compete with banks in these services to the extent that they are legally permitted to do so.

It is important to note that ATM, POS, and HIS will work together in the future. POS systems and ATMs will share network lines, and these systems will eventually reach out to incorporate other remote terminal activity such as HISs.

The various systems that have been and are being implemented for effecting payments are essentially designed to be substitutes for the paper check. While the rate of growth of checks has declined during the last several years and check usage in absolute terms may begin to fall between now and the end of the century, no one expects checks to be totally replaced.

Historically, usage of new consumer products has grown slowly during the first years following introduction. For successful products, this has been followed by a period of rapid growth. Then, as the level of saturation is approached, growth again slows. Overall, this creates the "S" curve shown in figure 11. This being the case, two questions relating to

Figure 11.—Penetration Curve for Check Alternatives



SOURCE: *Economic Review*, Federal Reserve Bank of Atlanta, August 1983, p. 33.

the substitution of new payment products for the paper check remain unanswered. First, at what rate will new services grow? Second, at what level of penetration by each product will the market become effectively saturated?

Not all potential users of a service will use that service. It has taken decades for the level of penetration for checking accounts to reach the 85- to 90-percent penetration level, where it now rests. Further, it is not reasonable to assume that the level of maximum market penetration is the same for all products. Over the long term, for example, the proportion that uses ATMs may far exceed that which uses home information and banking services.

Further, the level of maximum penetration may vary with time. As technology evolves and its costs continue to drop, and as the products are funded, the proportion of potential users who actually become buyers may change. For example, the maximum potential market penetration for a home banking service today that requires a terminal costing several hundred dollars may be quite different from what it will be for a derivative of that service that is implemented using a terminal that costs less than $100.

The time constants that determine the steepness of the curve may also vary in response to events in the market. For example, the rate of growth in some electronically delivered services may increase in response to a requirement that all employees of firms over a specified size be paid by direct deposit. On the other hand, a series of events that demonstrate inherent weaknesses in advanced payment systems could slow the rate of growth of some products. In general, the impacts of events are most likely to vary from product to product in the mix that comprises the offerings of the financial service industry.

In the past, great promise has been held out for various payment products that has yet to materialize. However, increasing use of computers and telecommuncation throughout society and the dynamism of the financial service industry may be creating an environment more favorable to the adoption of new systems for delivering financial services. Thus, there is a higher degree of confidence than in the past that the middle stage of the "S" curve will be reached, but the timing continues to be uncertain. The problem becomes one of closely monitoring developments in the financial service industry to identify those areas most likely to reach a critical mass and to assess on an ongoing basis the benefits and costs to society of the changes that are expected.

Chapter 5

Wholesale Financial Services

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Chapter 5

Wholesale Financial Services

Retail suppliers of financial services provide consumers with a variety of products and services, including deposit-taking, securities brokerage, and credit extension. Wholesalers, in turn, provide a variety of services to retailers, services that may be grouped under two broad headings. First are the wholesale products that affect the balance sheets of the providers, usually by converting assets from one form to another (e.g., cash to notes receivable or vice versa). For example, institutions can purchase debt instruments in secondary markets, or a bank may participate in a loan syndicated by its correspondent. Historically, depository institutions have always been suppliers and users of this class of wholesale services. They have established and maintained correspondent relationships that have included such features as loan participation and the operation of secondary markets for various debt instruments, without relying on automated processing.

A second class of wholesale products comprises mainly processing and information services. Included in this group are check and credit card processing, general accounting and account maintenance services, and communication services. This chapter describes the wholesale financial products and services that are available, the organizations that participate in this segment of the industry, the role of technology, and the trends that are presently in evidence.

Changes in the financial service industry have shaded the fine lines between wholesale and retail services. For example, from the point of view of each organization that issues a VISA card, VISA International, the parent of the VISA service, is a wholesaler that provides the interchange services that are essential to the operating concepts embodied in bank card organizations. On the other hand, VISA International actively markets its products on behalf of its members and is highly visible to the consumers. In this sense it can be viewed as a retailer of financial services.

Wholesale and retail financial services will continue to overlap in the future as the implementation of advanced financial service delivery systems tightens the coupling between the organizations that perform the various functions that are required to deliver services. However, for the moment, it remains useful to describe wholesale and retail services separately.

On the one hand, the earliest applications of information processing and telecommunication technologies were in the area of wholesale financial services much more than in retail. Check processing and account maintenance services have been provided by third-party operators for years. Wire transfers of funds have been used since before the turn of the century. On the other hand, there are wholesale services that are not particularly susceptible to automation. Arranging loan participations may rely heavily on telecommunications, but the process is not really automated.

However, wholesale financial services are not really separable from other financial services that may benefit greatly from the application of advanced technologies. Thus, policies that are directed at changes resulting directly from the application of advanced technologies to the entire financial service industry are also likely to impact wholesale financial services. Therefore, it is important that the reader who is concerned with developing policy for the financial service industry be aware of the full range of services provided by the financial service industry.

The Role of Technology in Wholesale Financial Service Systems

The financial service industry was one of the early users of advanced technology for product delivery. Transaction volumes of checks and credit cards now exceed the industry's ability to process transactions manually, and the increasing time value of money and the variety of alternatives for investment have placed a premium on the ability to move funds and information rapidly and accurately over wide geographic areas. Even for small organizations, the accessibility of economical processing services has been crucial for survival.

Most of these processing services could not be delivered without the availability of the advanced communication and information processing technologies. Further, because of the heavy dependence of service providers on these technologies, firms with expertise centered in the technologies rather than in the delivery of financial services have recognized and developed opportunities in the financial service industry as providers of wholesale financial services. In addition, communication and information technologies have made possible the extension of wholesale financial services products to include features that could not have been offered without the technologies.

Historically, the costs of establishing and maintaining the processing capabilities required to support the delivery of financial services have been beyond the means of many retailers. Now, however, the low cost of information processing equipment and the increasing availability of low-cost software packages has brought within reach the decision support systems and other capabilities not previously available to small institutions. (The large systems for transaction procession and general accounting are not included in this group as they can be developed and supported only with significant resources.)

While all organizations need access to technology, not all have to develop processing capabilities within their own organizations. The problems of processing and other aspects of marketing and delivering services are largely separable. Managers of financial service providers are faced with the same "make or buy" decisions that confront those responsible for a manufacturing facility. A depository institution can either generate a loan portfolio through its own efforts, or it can participate with others who undertake the active marketing of credit services. Additionally, an organization can acquire and support the facilities necessary for performing the data processing entailed in delivering financial services, or it can buy those services from third parties. Further, just as merchandisers can set up an organization to buy in quantity for a group, financial service providers can realize economies of scale and scope by joining a consortium, or network, that establishes an organization to perform transaction processing.

Products Available in Wholesale Markets

Asset and Liability Products

The asset and liability products shown in table 7 include those where the wholesaler acquires an asset from the retailer, generally in exchange for cash. These services allow the retailer to turn over its portfolio and thus remain in a position to provide additional financing to retail customers. If this were not possible, retailers would be solely dependent on the generation of new liabilities (deposits from their customers) to meet demands for credit from the markets served. Thus, the ability to place assets in secondary markets is key to

Table 7.—Major Providers of Wholesale Financial Services

Nonbank and nonfinancial service company third-party processors:

- ADP
- EDS
- Decimus
- Control Data
- CSC/Infonet
- FDR (AMEX subsidiary)

Financial service institutions, joint syndications, and proprietary T&E cards:

- Rocky Mountain Bank Card (PLUS)
- CIRRUS
- VISA
- Master Card
- American Express

Nonprofit or governmental service or network providers:

- Swift
- Federal Reserve
- Federal Home Loan Bank
- Bank Wire
- New York Clearing House

Banks, other depository financial institutions, and associations:

- First Interstate Bancorp
- Bank One
- Citi-Bank
- Chemical Bank
- Bank of America
- CUNA
- California Credit Union League
- GESCO
- Mid Continent
- Dataline

Other industry groups:

- Brokerage firms:
  - Merrill Lynch
  - E. F. Hutton
  - Paine Webber
- Retailers (including grocery chains):
  - Sears
  - J. C. Penney
  - Montgomery Ward
  - May Co.
  - Federated Department Stores
  - Safeway
  - Kroger
- Insurance:
  - Prudential Insurance Co.
  - Equitable Life Insurance
  - Aetna Life Insurance
- Consumer finance corporations:
  - Beneficial Corp.
  - Dial Corp.
- Mortgage Brokers:
  - Loomis & Nettleson
- Trust Companies:
  - Trust Co. of the West

SOURCE: ICS Group Inc., Harbor City, Calif.

enabling the financial service industry to intermediate between those with funds to invest and those who require funds.

In this context, commercial firms that sell their receivables are users of wholesale financial services. Using these services, manufacturers and merchants are able to obtain the working capital needed to support their inventories of end-products, work in progress, and raw materials.

The originator of a loan may, under some circumstances, sell the debt in the secondary market while retaining the rights to service the loan. In this way, the capital is turned over, but the originator of the loan continues to benefit from a stream of fees paid by the holders in due course. In turn, the borrower benefits by continuing to deal with the organization that originated the loan throughout its life, even though it no longer holds the debt in its portfolio. Of course, the opposite situation, where the original lender retains the debt and buys processing services from another organization, can occur; or the originator may sell the loan and retain none of the servicing functions.

Small loan companies, on the other hand, will place commercial paper in the wholesale markets and use the proceeds to support their lending activities. Because they can borrow large amounts at favorable interest rates and receive a relatively high yield on their loan portfolios, a favorable spread is generated that can cover both their operating expenses and a profit.

At times, a lender will have the opportunity to place a loan that either exceeds the funds available or creates an unacceptable risk in that the amount to be lent would be excessively great relative to the net worth of the organization. Regulations also limit the size of a loan that can be made to any other borrower. Under these circumstances, the lender may syndicate the loan by obtaining contributions from others that will spread the overall risk and make available sufficient funds to meet the needs of the borrower. Also, banks, as part of their relationships with their correspondents, will routinely allow the correspondents to participate in loans that they place. Insurance companies behave in much the same way when they share indirect placements and ask or permit others to share in the underwriting of casualty coverage. Securities dealers form syndicates to underwrite offerings of debt or equity instruments.

Processing Products

As noted, the delivery of financial services depends heavily on the processing and transmission of large amounts of data. For all practical purposes, the application of advanced information processing and telecommunication technologies has become mandatory.

Among the processing products offered by the providers of wholesale financial services are the processing of checks and credit and debit card drafts; the processing required to support all types of depository products; and information services, such as credit/check authorization and economic data and models that are used for analysis and decision support. Also included is the processing required to consolidate and disburse funds as part of offerings of cash management services.

Transaction processing facilitates the execution of an order given by the owner of an account to credit or debit it. For all practical purposes, from the point of information flows that are created, the type of accounts posted during the transaction is immaterial. In fact, major bank card processors use the same systems to process debit and credit card transactions, and only the customer and financial institution that holds the customer's account knows whether a line of credit or a demand deposit account or other type of account is debited.

For this assessment, the critical point is that the systems used to process orders against accounts are large and complex and are therefore expensive to build, operate, and maintain. Hence, many organizations do not have the resources to develop and operate such systems internally, and others choose not to undertake such activities. Instead, they turn to third parties, many of whom are not conventionally classified as financial institutions, to provide the processing capabilities required. Retailers of financial services decide on the degree to which they will be vertically integrated and turn to wholesalers for those services they cannot or choose not to provide for themselves.

Clearing and settlement are elements critical to the operation of a system that supports the delivery of financial services. At present, only depository institutions have in place a system for clearing cash items involving the transfer of money between virtually any parties in society. Specialized systems, such as those operated by the airlines for settling fees for services provided to holders of tickets issued by others, by securities brokers for settling stock and bond transactions, and by oil companies for accounting for balances of crude oil moved between them, exist; but not with the wide area of applicability found in the system operated by the depository institutions for settling on money transfers. On the other hand, there is no reason why alternatives for settling money transfers that would not involve the depository institutions could not be established. Systems supporting the operations of the nonbank credit cards provide one such example.

Some wholesale products exist because of structural constraints within the industry. As noted, depository institutions are the only ones that have access to the payments mechanism. Therefore, when others offer products such as cash management accounts that give the retail user the ability to write a draft against the account, arrangements must be made with depository institutions for payment of the draft through the payments mechanism. The same type of arrangement holds for organizations that offer or accept one or more of the major bank credit cards. Thus, any securities dealer or private association that makes arrangements to issue a bank card and any organization that accepts the bank card must arrange for clearing or payment services through a depository institution. Only one retailer has been given direct access to a major bank card network, and the rules of the card-issuing organization have been changed to preclude another nondepository institution being granted such access.

Information Products

Financial data provide the basis for decisionmaking for individual organization and for the economy as a whole. Treasurers for both private corporations and public agencies must have knowledge of the funds available to them and the demands being placed on them. They must be able to consolidate easily those funds collected over wide geographic areas and to disburse them so that they meet obligations for payment. Opportunities for investing idle funds must be identified and exploited. These services together compose what are commonly offered as cash management packages. Other processing services, as shown in table 7, that depend heavily on the corporate data of the individual client organizations are also offered by wholesale financial service providers.

At a broader level, financial service organizations collect and market a variety of data used in decision support systems. Some also provide modeling and other prepackaged capabilities that can be used to analyze data. In some cases, completely developed models that can be used for experimentation by the users are offered; in others, facilities that enable the user to build, estimate, and validate models uniquely designed for a specific purpose are provided; and in still others, both capabilities are available.

Nonprocessing Services

Some wholesale financial services entail no processing capabilities. These services generally include provision of equipment, computer programs, and other support services used by retailers. As the capability to develop generalized software packages increases and users recognize that most organizations can make use of generalized packages, as opposed to developing unique application systems for themselves, the importance of the products produced by this segment of the wholesale financial service industry will increase.

Also included in this group are communications services that are particularly oriented to the needs of the financial service industry. However, more often than not these are general-purpose communications facilities that can be used for any number of applications, and only the fact that the operators make a specific point of marketing them to the financial service industry sets them apart from others and warrants that they be mentioned in the context of this assessment.

Firms that provide wholesale processing/facilities management services can be placed in one of four subclasses. First, there are those that take all responsibility for system operations and operate their own facilities apart from those of their clients. Second, some providers sell or lease software or equipment, and the users take all responsibility for day-to-day operations. In this case, services from several wholesale providers may be combined in a system designed to meet the needs of the client organization. Third, some providers offer "turnkey" services in which they design and install systems for their clients and then turn them over to the clients, who take over day-to-day operations. In the last category are those offering facilities management services where the service provider effectively takes over the operation of the processing department of the client organization, even though the department may be physically located in the client's facilities.

Providers of Wholesale Financial Services

The list of firms comprising the providers of wholesale financial services is quite diverse. Table 7 demonstrates this diversity, listing major categories of providers of financial services and citing specific examples of firms falling within each group. Table 8 shows which classes of firms provide each of the various classes of services identified in table 7. It shows the breadth of the product lines offered by each of the various classes of firms active in the financial service industry and the degree of competition between the very diverse firms that are providers of wholesale financial services.

Examination of table 7 shows that there is considerable opportunity for both vertical and horizontal integration for providers of wholesale financial services. On the other hand, the existence of a variety of specialized firms argues that, until now, the economics governing the operation of providers of wholesale financial services has not encouraged either vertical or horizontal integration. While some argue that either pattern of integration offers significant economies of both scale and scope, alternatives exist for achieving both economies. Notably, competitors in the marketplace are able to join in the creation of wholesale services while maintaining an active competitive environment based on end-product differentiation in retail markets.

Large commercial banks provide examples of vertically integrated operations. They perform check processing, operate credit and debit card systems, and support networks of automated teller machines (ATMs), some of which are strictly proprietary, while others are shared and may permit access by thrift institutions as well as by other commercial banks. Some have arrangements with nonbank issuers of either credit or debit cards to provide the required interface with appropriate clearing and settlement networks. Loan participation and clearing accounts are offered to correspondents. Also, they provide secondary markets for debt instruments, including mortgages and merchant and producer receivables created by others.

The degree of horizontal integration permitted commercial banks is limited. By law, commercial banks can underwrite neither corporate equity issues nor life or casualty insurance other than creditor life insurance. Securities trading is limited to ordering trades for the convenience of bank customers or the operations of trust departments. Commercial banks are not authorized to offer investment advice regarding securities to their clients. Further, they are permitted to offer data processing services to others only to the extent that such services are incidental to the business of banking. While recent rulings by the Federal Reserve Board (e.g., the CitiShare case) have broadened the scope of permitted activities, commercial banks and bank holding companies are not free to offer the full range of data processing and communication products that they could conceivably market.

On the other hand, even in the face of existing restrictions, the degree of horizontal integration of commercial banks and other depository institutions is increasing. Some now offer discount brokerage services, and others are developing connections with insurance companies or are setting up subsidiaries that can offer insurance under the laws of the States in which they are chartered.

Some merchandisers are also entering the market with a very broad range of financial service products. One provides retail credit service in direct support of its merchandising activities, a full line of insurance services, real estate and securities brokerage, and, in a limited number of States, deposit-taking through subsidiary thrift institutions. Yet even though this organization appears to be moving toward horizontal integration, only a minimal level of coordination has been achieved between the various constituent elements, and, therefore, the degree of horizontal integration achieved to this point appears to be minimal.

Table 8.—Product Provider Mapping

Wholesaled financial services v. providers (wholesalers of those services)	Nonbank third-party services	Bank syndications	Nonprofit and public back office networks	Banks: Correspondent and third party fee based	Commercial banks	Savings and Loan Associations	Credit Unions	Retail Merchants	Security Broker/Dealers	Insurance	Consumer Finance	Mortgage Broker	Trust
Asset and liability:													
Syndicated loans		X		X	X				X	X			
Project finance		X		X	X				X	X			
Lease receivable finance				X	X								
Indirect loan funding				X	X				X	X			
Correspondent bank overlines													
Revolving line of credit (i.e., BancOne is Merrill Lynch)				X	X	X	X						
Off-shore based lending		X		X	X				X				
Bankers acceptances		X		X	X				X				
Trust receipt financing					X				X				
Depository financial institution products:													
Direct deposit	X			X	X	X	X						
Check access certificate of deposit					X	X	X		X				
IRA, Koegh					X	X	X		X	X	X	X	X
Eurodollars		X		X	X	X			X				
Impress account					X								
Single premium deferred annuity (SPDA)									X	X			
Margin accounts									X				
Market making									X				
Leveraged leases		X		X	X				X	X			
Retail banking					X	X	X		X				
Middle and institutional market lending		X		X	X	X			X	X			
Repurchase agreement				X	X	X	X		X				
Money market funds				X	X	X	X		X		X		
Other investment funds													
Real estate									X	X		X	
Liquidity									X	X		X	
Growth									X				
Municipal									X	X		X	
Transaction products (paper-based)													
Mortgage lending		X		X	X	X	X		X	X	X	X	X
CSVLI loans					X					X			
Real property equities										X			X
Insurance premium financing										X	X		
Actuarial accruals										X			
Annuities									X	X			
Cash processing	X			X	X								
Payroll	X			X	X								
Money orders, traveler's checks	X			X	X								
Mortgage loan servicing	X			X	X	X	X					X	
Back end processing													
Installment loan servicing	X			X	X	X	X				X		
Mortgage loan servicing	X			X	X	X	X					X	
Commercial loan servicing		X		X	X								
Demand deposit accounting	X			X	X								
Savings account accounting	X			X	X	X							
Term deposit account accrual processing	X			X	X	X			X		X		

Table 8.—Product Provider Mapping (continued)

Wholesaled financial services v. providers (wholesalers of those services)	Nonbank third-party services	Bank syndications	Nonprofit and public back office networks	Banks Correspondent and third party fee based	Commercial banks	Savings and Loan Associations	Credit Unions	Retail Merchants	Security Broker/Dealers	Insurance	Consumer Finance	Mortgage Broker	Trust
General ledger	X			X									
Collateral control	X			X									
Cash control	X			X									
Trust accounting	X			X	X								X
Item processing	X	X		X	X			X					X
Wholesale/retail lockbox	X			X	X								
Check guarantee	X		X	X	X								
Securities safekeeping	X			X	X				X				X
Personal trust					X								X
Escrow accounting	X			X	X								
Note collection					X								
Mortgage banking				X	X	X	X			X		X	
Collection service (brokerage)				X	X								
Private placement									X	X			X
Equity brokerage					X	X			X				
Public offering									X				
Relocation management					X				X				
Real estate brokerage						X			X				
Securities settlement	X			X					X				
Transaction products (electronic-based)													
Data base access	X		X	X									
Branch automation	X			X									
Settlement and clearing	X		X	X									
Automated clearing house/electronic clearing house			X	X									
Wire transfer (domestic and international)	X			X									
Cash management	X			X	X								
Business banking													
Account reconciliation				X	X								
Account consolidation	X			X	X								
Balance availability reporting	X			X	X								
Balance concentration/sweep	X			X	X								
Automatic customer billing	X			X	X								
Deposit reconciliation				X	X								
Account payable check writing	X			X	X								
POS systems:													
Management for retailers													
Installation	X			X									
Data processing	X			X									
Settlement	X			X									
Reconciliation	X			X									
Credit authorization	X		X	X									
Check verification/guarantee	X			X									
Draft data capture	X			X				X					
POS transaction processing	X		X	X				X					
Home banking:													
Purchasing service	X	X		X				X					
Inquiry	X	X		X				X					
Bill payment	X			X				X					

Table 8.—Product Provider Mapping (continued)

Wholesaled financial services v. providers (wholesalers of those services)	Nonbank third-party services	Bank syndications	Nonprofit and public back office networks	Banks: Correspondent and third party fee based	Commercial banks	Savings and Loan Associations	Credit Unions	Retail Merchants	Security Broker/Dealers	Insurance	Consumer Finance	Mortgage Broker	Trust
Household budget analysis	X	X		X				X					
Catalog lock-up	X	X		X				X					
ATM systems:													
Provider of:													
On-line network services	X												
Machine procurement services	X												
Lease-back services	X												
Credit authorization	X	X	X	X				X					
Check verification	X												
Draft data capture	X												
Transaction processing	X	X	X	X				X					
Comingled investment pools:													
Sweeps									X	X			X
Federal fund management				X	X								X
Employee Benefit Trust				X	X								X
Direct debit	X		X	X					X				
Funds movment and inquiry	X	X		X									
International:													
Letters of credit		X		X	X								
Credit inquiry		X		X	X								
Foreign exchange		X		X	X				X				
Draft collection		X		X	X				X				
Syndication		X		X	X				X				
Dollar collection		X		X									
Stock transfer	X			X	X				X				
Commercial paper				X					X				
Options/futures									X				
Equity brokerage					X	X			X				
Index funds brokerage									X				
Bond brokerage					X	X			X				
Fund management	X			X	X				X	X		X	
Debit cards	X	X		X	X								
Securities settlement	X			X					X				
Discount brokerage	X			X	X	X			X				
Securities lending				X					X				
C.D. brokerage				X					X				
ISA										X			
Information systems													
Cash requirements forecasting	X					X							
Working capital and cash flow analysis	X				X								
Investment return optimization analysis	X				X								
Consumer financial analysis	X				X								
Business financial analysis	X				X								
Quotation service for debt instruments	X								X				
Credit reporting agencies	X												

SOURCE: ICS Group, Inc., Harbor City, Calif.

In another area, one of the major providers of a nonbank credit card has become one of the largest wholesale providers of card processing services to others. This provider also offers an extensive package of traveler's checks and card-oriented credit services through participating commercial banks and thrift institutions.

Among the nonbank providers of wholesale financial services are those that operate communications facilities, networks of ATMs that are shared among various depository institutions, and independent processors, with roots more in the information processing industry than in the financial service industry. With its divestiture, American Telephone & Telegraph will be able to provide enhanced services specifically tailored to the financial service industry. However, it will have to compete with other telecommunications carriers, banks, and others that already operate in this market if it chooses to enter. Operators of food chains and others are installing ATM networks and inviting the depository institutions to join them. This trend has raised the thought among some bankers that they may not be able to retain their control over the payments system in the long run. Finally, as shown in table 8, various data processing service bureaus and software suppliers meet the needs of significant portions of the financial community for processing services, and there are some indications that they would like to expand their role in the future.

The Federal Reserve System occupies a unique role as a provider of wholesale financial services. It is a lender of last resort to depository institutions in need of funds to meet reserve requirements. Through the Open Market Desk at the Federal Reserve Bank of New York, it markets Federal Government debt and implements monetary policy through the purchase and sale of Government securities. It is a major factor in the clearing of checks and a provider of currency and coin to the banking system.

The national system of automated clearing houses (ACHs), except for the one in New York, is owned and operated by the Federal Reserve System. Recently, ACHs have broadened their capabilities to process individual customer-initiated transactions. The bulk of the traffic handled by ACHs is generated by the Federal Government in the form of payroll and payments to recipients of entitlements, such as social security.

The role of the Federal Reserve in these markets has been controversial for some time. Even though Congress mandated that the Federal Government recover the full costs of providing services, some argue that its pricing still puts private suppliers of alternative services at a disadvantage. Some also see an inherent conflict of interest between the Federal Government as a supplier of services on the one hand and as a regulator of the institutions that are its customers on the other.

The Federal Reserve is charged with ensuring the orderly movement of funds nationwide in order to provide a healthy climate for commerce. In some areas it is meeting with competition. However, in others, such as providing service to institutions in remote areas that cannot profitably be served by the private sector, it continues to meet a real need.

Volumes of checks processed by the Federal Reserve declined after the institution of pricing for services. Also, there is a movement to separate ACH operations from the Federal Government. Therefore, its future role as an active participant as a provider of financial services is open to question.

The Importance of Access to Data and to the Payments Mechanism

Since only the depository institutions have access to the payments mechanism for the transfer of funds, all other institutions must work through them. For example, money market mutual funds, on which customers can write drafts, conventionally maintain a zero-balance account with a depository institution that is funded at a level sufficient to cover the drafts presented each day. They then use transaction data supplied by the depository institution to post appropriate debits against customer accounts.

On the other hand, the depository institution can have available to it virtually all of the financial data of its customers because all payments transactions pass through its hands. Because it has access to the data and the means to act on them on behalf of the customer, some argue that depository institutions occupy a unique place that puts potential competitors at a significant disadvantage. The argument follows that restrictions are necessary on the operations of depository institutions with regard to the information processing services they may offer so that they will not benefit unjustly from the position they enjoy. Thus, at issue is the degree of access these organizations have to a customer's data, and the payment mechanism and the relative advantage the firm enjoys in the marketplace.

To the extent that wholesale financial services can be provided only with the support of advanced technologies, a point of no return has been passed in which the only possible backup to an automated system is another automated system. Further, in this environment, all providers of the services need access to the technologies, and lack of such access could make it impossible for a company to remain in business.

In general, the trend to greater reliance on advanced information processing and telecommunication technologies in support of systems for delivery of wholesale financial services will continue indefinitely into the future. To some extent, those providers of wholesale financial services who do not perform processing internally will become more dependent on the products of others, and therefore may lose some of the flexibility in designing and operating systems for delivering financial services that they now enjoy. Greater shared use of processing systems, driven by the economics of system development, deployment, maintenance, and operation, will mean that competition between the various producers of financial services will, in the future, be based on factors other than the features of the processing systems used by the competing organizations.

Finally, both the providers and users of wholesale financial services are more accustomed to dealing with advanced technologies than consumers are. These organizations have for years been using technology-based applications, such as cash management services, that will not be significant in the consumer marketplace for many years. Therefore, for those who operate in wholesale financial service markets, future changes will not be as traumatic as they may be for the remainder of the public that is generally not accustomed to dealing with relatively sophisticated systems. Thus, the changes that take place in the wholesale services are less likely to attract widespread attention than those provided to the general public at retail.

Future of Wholesale Services

Although much attention has been focused on the entry of new types of providers of financial services into retail markets, the maturity of participation in wholesale markets by nontraditional financial service providers is proportionately much greater. Since financial service firms have established a high degree of sophistication in the use of the technologies and they are more familiar with the operational requirements of the industry than anyone else, those with adequate resources and the inclination to do so will remain significant factors in the market for wholesale financial services. On the other hand, because the information processing and telecommunications industries have developed the expertise to analyze and meet the requirements of others, firms not ordinarily identified with the financial service industry will increasingly challenge traditional financial service firms in the market for wholesale services.

The introduction of advanced networking has broadened existing relationships between providers of financial services to include the new products and services that have become available. For example, a bank will contract with a securities dealer to clear drafts that are processed through the payments systems in addition to providing the more traditional banking services. Institutions that have benefited internally from investments in systems incorporating advanced technologies to increase productivity, have often offered them on the open market to others who, in turn, have also been able to increase productivity.

On the other hand, developers of new products try to benefit from the revenue generated by franchising those products to others. The franchisees benefit because they do not have to incur the costs of designing and developing the systems to support new product offerings. One major money center bank is following this strategy in offering its home banking service to banks nationwide.

These types of relationships will continue into the indefinite future. Economic conditions have put pressures on operating margins that will stimulate all providers of financial services to take whatever steps are required to improve productivity. Since only limited numbers of institutions are in a position to support major new product development efforts, many will look to third parties to create the capabilities that are needed.

Banks and other traditional providers may be expected to extend their customer base outside of their traditional boundaries. Holders of financial assets are in a position to argue that they have both the knowledge to build the capabilities needed by their customers and immediate access to the data used by the system.

On the other hand, data processing service organizations can marshal many of the same arguments as banks to claim that they are in a position to provide a wide range of payment and information services to a broad client base. However, they are somewhat limited in their ability to offer complete payment systems because they can initiate payments only through a financial institution that has access to the payments mechanism.

In the long run, however, processing technology is neutral; and the ability to succeed as a provider of wholesale financial services depends on the level at which requirements are understood and operationally viable systems are implemented. Systems that meet the needs of the users and are supported adequately will succeed in the market regardless of where the processing is done. As improved processing technologies become available, providers of wholesale financial services will adopt and market them. Adoption on the wholesale side of the financial service industry will be more rapid than on the retail side because changes in wholesale services are less likely to be visible to the end-users. Competitive impact in the retail market will be minimal because there will be little, if any, requirement for consumers to change their behavior patterns.

Increasing use will be made of telecommunications to deliver financial services, and there will be new opportunities for telecommunication providers to function as providers of wholesale financial services. In addition to providing neutral communications capabilities, as they have in the past, they are in a position to offer enhanced services to the financial service industry. Some may position themselves as operators of networks and provide gateways between these networks and others. Transaction interchange could become a major area of activity. Food retailers that install and operate ATM networks also fall in this category.

Technologies that offer opportunities for bypassing telephone companies that provide local service have considerable potential for providers of financial services. Already, a television cable from central Manhattan to the Wall Street area carries considerable traffic generated by providers of financial services. The teleport concept being implemented in New York and considered elsewhere offers the opportunity for bypassing both local and long-distance carriers. Since the switched telephone network is not particularly suited to carrying large volumes of data traffic, and costs for local communication are expected to increase significantly in coming years, bypass technologies and those that offer them will be an important factor in the development of the financial service industry.

Conceivably, the major long-distance carriers will become significant providers of wholesale financial services, with offerings that range from networks dedicated to specific users to networks that include the processing required for online, real-time clearing of payment transactions. The switches that run these networks are computers capable of performing the processing required to provide the clearing function.

Given the evolution of regional ATM networks, the focus of nationwide service could be the facilities that provide for interchange between networks rather than the development of monolithic networks that cover the country. This outcome would generally follow the model of the bank card systems, where the various institutions operate somewhat independently of one another, with the major associations providing facilities for interchange. On the other hand, American Express has implemented a major network that takes advantage of ATMs installed by participating banks. Money can be accessed from any financial institution designated by the customer; and American Express moves funds from the institution holding the customer's account to the one that has dispensed the funds.

Developers of the information utilities now becoming operational are in general agreement that financial services will comprise a key element of the packages to be offered. Information providers are positioning themselves as gateways to financial service providers, and, therefore, are functioning in a wholesale capacity. They contract with retail providers who define the services that will be provided through the information utility. Subscribers to the information utility are then able to select the retail financial service packages to which they will subscribe. Such arrangements complement shop-at-home and travel arrangement services that may also be offered through the information utility.

People who have evaluated the market for home information services now generally agree that no one product offered by itself will be viable. The packaging of financial services with other information and, possibly, entertainment products will be critical to the success of services that distribute information to the home. Various types of firms will assemble these packages and, in effect, will be providing the wholesale functions. Some, as in the case of Knight-Ridder, will be publishers that assemble and perform much of the marketing for the products of various providers. Others, like Chemical Bank, may be the creators of one part of the service and assemble other parts of the package from offerings of other suppliers. Still others may provide a totally neutral communications service that provides paths to many providers and the opportunity to interchange information between them. Such a service would rely on each provider to perform all of the marketing and other activities required to support its customers.

Chapter 6

The International Environment for Financial Services

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Chapter 6

The International Environment for Financial Services

Introduction

The economies of the world have become increasingly interdependent trading economies. The financial service industry supports these activities by providing the means to transfer payment for goods and services purchased internationally and by acting as an intermediary between those nations with excess funds and those in need of funds. As the economies of individual nations become more intertwined, the role of the financial service industry becomes more important to the world economy.

Changes are taking place in the structure of financial markets as well as the structure of the industry and its participants. Communication and information technologies have helped to make markets that were once local or regional in character, global. Funds travel across national boundaries with such ease that disequilibrium is offset. This flow of funds became increasingly evident in the 1970's with the excess capital available from oil-rich nations.

Separate from, but related to, changes in financial markets are the structural changes taking place in the industry itself. During the rise of multinational corporate activity in the 1960's and 1970's, banks moved abroad to follow corporate customers. In addition, banks found that in order to insure access to many of the foreign money markets, it was necessary that they establish a presence, either through a branch or an affiliate. A final reason for multinational branching by U.S. banks, was that regulation, taxation, and supervision of institutions in other nations was more often favorable to the conduct of their business.

In the past 20 years there has also been a number of new entrants in the field. Smaller banks have been able to participate in international finance through the use of innovative lending arrangements. Nonbank financial service providers have developed large, international networks to facilitate retail flows. SWIFT (Society for Worldwide Interbank Financial Telecommunication), a network established by the banking community to facilitate international interbank transfers, is on the verge of offering traditional bank services, perhaps in direct competition with its founders.

These relationships rely heavily on both the flow of information and the international transfer of funds. Information technologies therefore found early application in the international financial arena, beginning with the telegraph. It is difficult to assess and identify the individual impacts of the technologies on this segment of financial service activities, since the use of the technology is so prevalent. In many ways much of the activity in the international financial markets could not occur without the technology.

The Growth of International Banking

Post-World War II developments in capital movement and the restructuring of the foreign exchange system helped foster trade, which in turn expanded the role of the private banking community to support these trade flows. Moreover, the development of multinational corporate activity expanded the need for financial services connected with direct investment operations and established new requirements for the conduct of multinational business.

At first, international financial activities expanded in traditional ways: through the exchange markets and accepted ways of international lending. Eventually, the movement to increased internationalization of financial activity was supported by changes in bank strategy and management and by institutional and structural changes in international money and credit markets.

By all counts the growth of international banking has been phenomenal. The Organization for Economic Cooperation and Development (OECD) has compiled figures on the growth of international banking in developed nations over the last two decades. Although there is no comprehensive measurement for world banking activity, and many measurements of this activity include double-counting and inflated figures, the gross figures and the net figures (which should eliminate the double-counting) are strikingly similar. In the period from 1975 to 1981, net international bank lending increased by an average annual rate of 23.9 percent, while the net size of the eurocurrency market* increased by 21.6 percent. Although the figures for this period show considerable growth, the eurocurrency markets experienced their greatest growth from 1965 to 1970, when average annual changes were 37.7 percent.[1]

Similar statistics illustrating the relative importance of foreign business of banks show that the average growth of foreign business for OECD banks as a whole has been from 12.1 percent of assets in 1970 to 23.7 percent of assets in 1981, and from 11.3 percent of liabilities in 1970 to 23.4 percent of liabilities in 1981.[2]

R. M. Pecchioli, in a recent OECD report, attributes the evolution of international banking's structural features to a number of factors: changes in the international economic and financial environment, the evolution of demands for financial services by borrowers and investors alike, and the spreading of technological facilities.[3] The events of the 1960's were, for the most part, the result of the gradual recovery of the world economy from the devastation of war, and the liberalization of trade. The 1970's, however, brought major structural changes to the world economy; world payments balances became more severe, and there were major structural changes in the international payment and financial systems, all of which gave banks a pivotal role in international financial intermediation.[4]

New Directions in International Banking

It is impossible in this report to provide a comprehensive survey of all the changes in international banking techniques; rather, important product innovations will be highlighted, along with the entry into new markets.

Sources of International Funding

International banking strategy does not generally distinguish between domestic and international funding, since, for the most part, banks will follow an overall assets and liabilities management policy. Two major sources of funding in the international market are the certificate of deposit (CD) and the floating rate note (FRN). CDs are negotiable receipts for large deposits; they have been used in the United States for many years and in the Eurodollar market since 1967.[5] London is, by far, the leading center for CDs. In 1981, foreign currency CDs issued by London banks totaled more than U.S. $75 billion, most of which was actually denominated in dollars.[6] FRNs, which are borrowing instruments used by banks, have a position of slightly less importance in international funding, although recently their importance has grown. Generally FRNs allow banks to secure funds for longer terms than those available through the deposit market.[7]

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*A eurocurrency is a deposit account at a European bank denominated in a currency other than that of the host bank.

[1] R. M. Pecchioli, *The Internationalisation of Banking: The Policy Issues* (Paris: Organization for Economic Cooperation and Development, 1983), p. 16.

[2] Ibid., p. 19.

[3] Ibid., p. 17.

[4] Ibid.

[5] Ibid., p. 28.

[6] Pecchioli, op. cit., p. 28.

A unique aspect of international funding, however, is the reliance on interbank deposits as a major source of funds. Although it is difficult to measure, the interbank market is by far the largest source of international funding. Recent estimates place this market between two-thirds and three-quarters of total external and eurocurrency liabilities of reporting banks, or close to U.S. $1,000 billion.[8] What is not reflected in these figures is that the volume of trading is very heavy, reaching the proportions of the foreign exchange markets. The effects of information and communication technologies can be readily observed in this area. They are reflected in the high velocity and volume of trading, as well as in the participation in the wholesale market of many smaller, nonmoney center banks.[9]

International Lending

During the 1970's there was a rise in the willingness of private banks to finance development projects. Much of this came about as a result of the inability of domestic markets to absorb excess capital. Recently, the multilateral lending agencies, in particular the World Bank, have announced cofinancing projects, in which private banks are allowed to participate. These projects are thought to appeal to smaller banks, which value the ability of the World Bank to assess the viability of development projects.

Innovations have also occurred in the flexibility of the structure of the loaned funds, as well as in the markets approached. As banks' international assets have increased, their approaches to the marketplace have changed. The most evident of these changes is in the development of international credits through loan syndication.

Syndicated lending is the process by which very large amounts of funds are raised by allowing the participation of a number of banks. The benefit to the borrower is that these funds can be raised through a single operation. The benefit to the lender is that risk is spread among many banks, and institutions that could not undertake such a loan on their own can participate.[10]

The current "international debt crisis," where developing countries are unable to repay their loans to developed nations, has brought generally into question the risk of international lending and, specifically, the role of syndicated lending in exposing a greater number of institutions to risk. It became clear that smaller banks were becoming involved in international lending. It is not possible to address, in the scope of this report, the issue of the possible mismatching of liabilities and assets that can occur as a result of loan syndication and the subsequent risk and foreign loan exposure. Instead, the extent to which communication and information technologies contribute to the situation should be noted.

Technologies affect the ease with which banks can become involved in international lending. These same technologies may also help in better monitoring and control of international debt and repayment, helping to overcome the international destabilizing effects of a major default. In response to the severity of the situation, and the possibility of major-country loan defaults, a number of large multinational banks established the Institute of International Finance. The purpose of the institute is to provide valuable risk information about countries to member banks that are making loan decisions. The information is provided to members via an institutional network, using international telecommunication lines.

Multinational Banking

Multinational banking can be loosely defined as the branching abroad of banks. Multinational banking cannot be completely separated from the international activities of banks. (Much of what is described in the previous sections can and does take place in branches of U.S. banks located outside of this country.) Multinational banking developed concurrently with international banking, but has different causal factors.

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[7] Ibid.

[8] Ibid, pp. 29-30.

[9] Pecchioli, op. cit., p. 29; J. R. S. Revell, *Banking and Electronic Funds Transfers*, date, p. 156.

[10] Pecchioli, op. cit., p. 32.

The first movement of banks to set up branches in foreign countries was generally in support of multinational corporate activities. As trade became more important and these activities increased in the 1960's, banks found it necessary to follow their clients abroad. Eventually, international banking grew and national economies and money markets became intertwined, and the banking community realized that its physical presence was necessary to secure and maintain market share as well as to participate in the developing financial markets abroad.

During the past two decades this activity has increased considerably. The number of overseas branches and agencies on a worldwide basis increased from 112 banks with 4,390 branches in 1961 to 387 banks with 4,329 branches in 1978.[11]

Methods of participation in foreign markets include everything from full-service branches to the establishment of "shell branches," which are booking offices located in foreign countries that do not administer the business carried on their books and have no contact with the local market. Each method has its benefits, depending on the motivation of the parent institution.

Offshore Banking

Offshore banking is any banking activity within a country's borders, but outside its banking system. There is considerable debate as to exactly which nations of the world should be considered offshore centers. For example, the City of London provides favorable conditions for off-shore banking, although it would not be a conventional member of the group considered off-shore centers. The United States first permitted the development of international banking facilities (IBFs) in December 1981 in an attempt to bring back much of the Euromarket business, which had fled this country due to State tax laws and Regulation D. IBFs are banks located in the United States, but because of the nature of their business are not subject to some of the regulations under which banks operate domestically. Both U.S. banks and foreign banks operating in this country can establish IBFs. They are established through State and local laws and amendments to Regulations D and Q and are similar to an off-shore "shell" branch that operates on-shore.

The development of off-shore banking centers is facilitated by information technologies, which tend to make the industry less location-sensitive. Nations have developed a sophisticated communication system solely for the support of the financial service industry. This can encourage further migration of the players out of more regulated environments, which in turn makes it extremely difficult for the U.S. Government to implement policy and to control the flow of funds in the United States.

U.S. Branching Abroad

The movement of U.S. banks abroad coincided with the multinationalization of American corporations. However, there were added incentives for U.S. banks to go multinational that were perhaps not evident in other nations, in particular domestic, a regulatory structure that restricted U.S. banks from branching outside of a limited geographic area and limited their potential market share in the United States.

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[11] Pecchioli, op. cit., p. 59. Pecchioli explains the seeming contradiction between the claim that multinational banking activity increased and the actual number of overseas branches decreased. "In fact the decline in the number of total branches between 1961 and 1978 is an 'artificial' one in that it reflects a sharp decline of branches of European banks (United Kingdom and French banks in particular) in African and a few Asian countries which, following a policy of indigenisation motivated by economic nationalism, introduced restrictive legislation and induced takeovers by nationals during the period under review . . . [T]his policy led parent banks to change the form of their presence in these countries from branches to affiliates. If branches in these countries are excluded from the total, the size of the global network more than doubled in the period under consideration."

Foreign Banks in the United States

The number of branches and agencies of foreign banks in the United States increased from 34 in 1961 to 241 in 1978 and to 452 in 1983.[12]

Until 1978, foreign bank branches in the United States were treated very differently under the regulatory structure than were U.S. bank branches. With the International Banking Act of 1978 much of the so-called discrimination against U.S. banks in their home market was done away with. There is still some contention that the system does not treat U.S. and foreign banks totally equally, but for the most part, foreign banks must abide by the same regulations as U.S. banks.

Financial Markets

Money Markets

Perhaps the most remarkable growth in bank use of foreign money markets as sources of funds in the last 20 years occurred in the eurocurrency markets.

> Banks' rapidly growing involvement in euro-market business was largely by response to two basic elements: perception of the profit opportunities arising from differential regulatory provisions applying to international and domestic business and increased reliance on portfolio diversification as a means for reducing risk exposure. Over the years, an additional stimulus to the expansion of eurocurrency transactions was provided by the growing familiarity of customers, both depositors and borrowers, with the peculiar techniques of foreign currency operations and particularly by the proved depth and resiliency of the interbank markets in foreign currencies.[13]

The eurocurrency market provided banks in countries with undeveloped money markets the opportunity to enhance the management of their liquidity. The development of sophisticated interbank communication techniques also had a significant effect on the ability of banks to participate in these markets.

Flexible exchange rates have enhanced the acceptability of the eurocurrency markets as "substitutes" for the foreign exchange market with respect to hedging.

International Financial Information Systems

Computer-based business information systems are finding widespread application in the financial service industry, particularly in international finance. A major figure in this area is Reuters, the world's oldest international news agency. Reuters Monitor provides information on worldwide money markets to financial institutions via 15,000 terminals in 74 countries.[14] By far the leader in this service, Reuters competes with other nonbank financial data providers in the United States and abroad, as well as with the information services of financial institutions. The Reuters service is unique in that, as a videotex system, it also provides the opportunity for the user to deal in the markets and may eventually allow the user to confirm and complete deals using a terminal.

The information provided in these systems has always been available, it was just not readily accessible. In the case of the money markets, the information provided by these services was not previously available in one place. Often these services provided additional, useful information or information that could be found elsewhere in newspapers or reports. However, what was once useful is now essential information, providing a competitive edge to its user. This in turn has forced most institutions wishing to be competitive to use the systems. Technology has provided the catalyst for the growth of these systems.

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[12] Pecchioli, op. cit., p. 59; (1961 and 1978) Federal Reserve Board of Governors, 1983.

[13] Pecchioli, op. cit., pp. 19-20.

[14] Paul Walton, "A Boon for the Money Markets," *Financial Times*, Dec. 14, 1983, p. 28.

An annoying side-effect of these systems is the proliferation of terminals and the incompatibility of systems. A dealer, in order to have access to a variety of information sources, may need four or five different terminals. This situation is bound to right itself in the long run, either by each organization's having a centralized information function that feeds into its own data system, or by existing vendors offering their services on compatible systems.

International Interbank Communications

Much of the international banking activity described in the preceding sections takes place via sophisticated international communication facilities. This is particularly true for interbank transfers of information and funds. As international banking has grown, so too has the importance of these functions. In recognition of this, many of the large, money-center banks formed private telecommunication networks to help ease some of the problems associated with massive paper flows. Interbank transfers are generally high-value transfers.

New York Clearing House Association

In 1970, the New York Clearing House Association began operating the Clearing House Interbank Payments System (CHIPS). CHIPS was founded to help meet the need perceived by a few of the large New York money-center banks for an automated system. Since its inception, CHIPS has been almost entirely automated, although for a short period in the beginning some of the clearing was paper-based. Although CHIPS has not stated any intention of expanding geographically, it is responsible for moving among banks an estimated 90 percent of the U.S. dollars exchanged in international commerce.[15]

Society for Worldwide Interbank Financial Telecommunication

SWIFT, founded in 1973 and operational in 1977, is the largest of the international financial telecommunication networks. SWIFT is not a financial organization nor a telecommunication common carrier; instead, it is a nonprofit cooperative society that links member banks worldwide through a data processing and transmission network. SWIFT owns and operates its own processing facilities and leases communication lines from national or international carriers.

SWIFT was initiated by a group of European bankers who were searching for a better way than mail or telex to transmit messages to correspondent banks. In response to the increase in international financial volume in the 1950's and 1960's, a number of banks had established internal communication and processing systems. These proprietary systems usually connected only branches and affiliates of the banking groups, and therefore transactions involving a number of banks would often rely on a paper-based system. Another drawback of these proprietary systems was that they established a myriad of standards, comparable to the different gauges of railroad track one still encounters when crossing some national boundaries. The creation of SWIFT was in response to the need to establish a rapid communication and processing system, which was universal and standardized, was for all international interbank transfers and was available to all banks. SWIFT was also seen as a way to compete with these intrabank communication systems, particularly those of large U.S. banks but eventually also a number of smaller U.S. banks, in order to provide the volume necessary to support the system.

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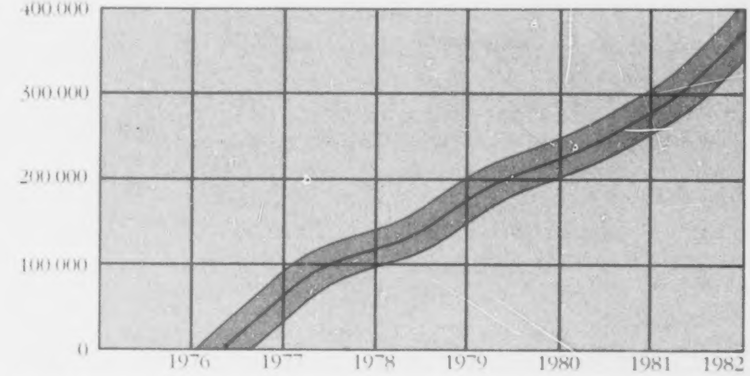
[15] "CHIPS: More Than Just a Clearing System," *Trans[illegible]on*, February 1983, p. 20.

When SWIFT was incorporated in Belgium in 1973, it was owned by 239 European, North American, and Japanese banks in 15 countries. In its first year of operation, SWIFT averaged 51,700 transactions per day.[16] As of April 1983, the SWIFT system served 1,063 member banks in 52 countries, of which 33 were operational countries, and processed an average of 360,000 financial transactions per day (see figs. 12 and 13).[17] This represents about four times the combined total transactions of the two private sector bank payment networks in the United States, Bankwire and CHIPS.[18] SWIFT is not a clearing or settling network and does not read the messages as they pass through the system; therefore, the value of these transactions is difficult to determine.

Figure 12.—Daily System Traffic Volumes (average: end of year)

DAILY SYSTEM TRAFFIC VOLUMES
(AVERAGE: END-OF-YEAR)

1977	51.700
1978	121.500
1979	164.200
1980	218.700
1981	285.000
1982	346.300

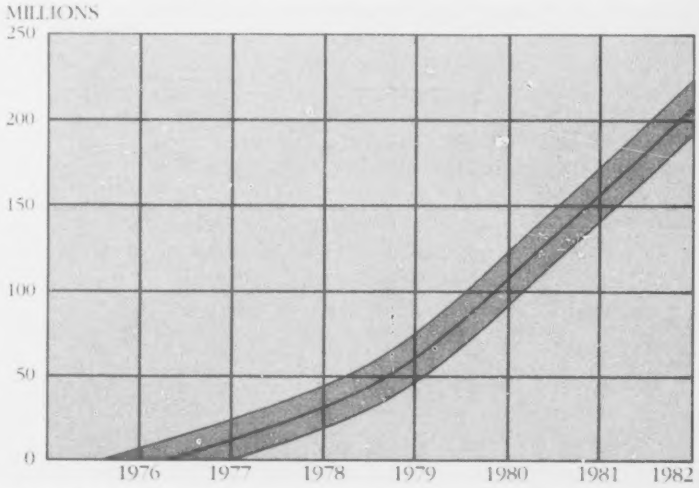


SOURCE: *SWIFT: Ten Years*, special anniversary issue of the general introductory brochure (Brussels, Belgium: Society for Worldwide Interbank Financial Telecommunication, May 1983).

Figure 13.—Cumulative System Volumes (end of year)

CUMULATIVE SYSTEM VOLUMES
(END OF YEAR)

1977	3.373.100
1978	24.751.200
1979	59.330.000
1980	106.506.000
1981	169.081.000
1982	248.609.400



SOURCE: *SWIFT: Ten Years*, special anniversary issue of the general introductory brochure (Brussels, Belgium: Society for Worldwide Interbank Financial Telecommunication, May 1983).

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[16] *SWIFT: Ten Years*, special anniversary issue of the general introductory brochure (Brussels, Belgium: Society for Worldwide Interbank Financial Telecommunication, May 1983), p. 25.

[17] SWIFT, "Facts About SWIFT," April 1983.

[18] "Executive Suite," *Transition*, January 1983, p. 2.

U.S. traffic over the network is higher than that of any other nation; in 1982 it was 17.7 percent of total volume, an increase from the 1981 figure of 16 percent.[19] Yet only 141 U.S. banks participate in the system. Carl Reuterskiöld, SWIFT's general manager, estimates "that as many as 500 U.S. banks are involved sufficiently in international banking to merit SWIFT membership."[20]

After 6 years of operation SWIFT is entering a new phase of operation. In 1982 it was able to amortize completely the development costs of the network, and for the first year, broke even. This has occurred even though SWIFT raised the basic per-message charge only once, to 18 Belgian francs (about 35 to 40 U.S. cents).[21]

SWIFT's plans for expansion include an improvement in technical transmission and processing facilities, commonly called SWIFT II. Plans are to install a new, more powerful computer system between 1985 and 1987 on a country-by-country basis. SWIFT will finance the new system internally from operating revenues.

Although SWIFT enjoys a comfortable position as the primary international financial transmission network in terms of volume, it has continued to seek new business opportunities. By September 1983, SWIFT estimated that it offered its base service to approximately 90 percent of the total international financial market.[22] SWIFT management foresees a leveling off of revenue in this business area and therefore plans to expand its revenue-producing message traffic in other areas. In 1982, SWIFT formed direct interface with the CEDEL and Euroclear bond clearing systems and MasterCard International to use SWIFT for transmission of transaction or settlement information.

SWIFT has also begun a controversial new program to offer new financial services, specifically balance reporting. Many U.S. banks view the proposed changes as potential competition for services that banks currently offer. However, if balance reporting does not lead to other types of cash management services, these banks will not challenge SWIFT's entry into this business area. SWIFT management maintains that the balance reporting service will be invisible to corporations and will remain an interbank service. There is evidence that although U.S. banks may be wary of the changes, European banks may be encouraging the implementation of these new services.

Another service that SWIFT management intends to expand is the provision of *intracountry* financial communications.

One of the primary achievements of SWIFT for international banking has been the standardization of international, interbank communications. With respect to new services, SWIFT intends to play the same role, thereby helping to establish international standards in cash management services.

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[19] Robert Trigaux, "SWIFT Executives and Bankers Mull the System's Future," *American Banker*, New York, May 17, 1983, p. 1.

[20] Ibid., p. 31.

[21] Ibid., p. 31.

[22] B. Kok, "The Business Future," *Proceedings From SWIFT International Banking Seminar (SIBOS '83)*, Sept. 26-30, 1983, Montreux, Switzerland, p. 12.

The Effect of Technology on International Payment Systems

J. R. S. Revell distinguishes between two classes of payments in his work, *Banking and Electronic Funds Transfers.*[23] Borrowing from the work of J. M. Keynes, Revell separates international financial flows into two categories: those involving the transfer of income and the payment for goods and services by nonfinancial business and households, or the "industrial circulation" (corporate and retail payments), and those involving foreign exchange, the money market, and the capital market, or "financial circulations." It is a useful distinction when one is concerned with the impact of the technology on payment flows, for it would appear that certain characteristics of information technology will have different effects on the different types of flow. By using these two classifications, the specific impacts of the technology can be defined more clearly.

Information technologies have had a great impact on operations in both areas. The mechanisms of these markets have been described in previous sections. What follows are specific examples of the effect of technology on the two types of flows. In retail and corporate markets, the technologies have led to a range of new, technology-based products, adding to the choices available to the individual and corporation in international financial transactions. In financial markets the technologies have primarily affected the velocity and volume of transactions.

Corporate and Retail Markets

In many of the normal payments associated with trade, it is not speed of transaction which is of importance. Since trade payments are scheduled for particular days each month, the settlement of accounts could easily continue to be handled by mail, taking the delay into account. However, electronic payments add some control over these payments, and by their nature handle increased volume of payments much better than paper-based systems.

One of the distinguishing characteristics of the international market is that, as in the domestic market, corporate customers demand cash management services from financial service providers. The basic principle of these services is to maintain low operational balances, with the majority of funds invested and earning interest. The impact of communication and information technologies on the ability of a corporation to manage its financial position is similar to that in the domestic market; i.e., the manager is able to react immediately to information and to adjust the corporate financial position accordingly. The difference in the international market is that these transfers take place in multiple currencies and cross many international boundaries. For the multinational corporation, foreign exchange fluctuations provide a great incentive for initiating electronic transfers. The technology allows the user to react instantaneously, often protecting the corporation from foreign exchange losses in times of economic turbulence.

Another difference from the domestic marketplace that affects the complexity of international cash management is that the manager must rely on information from a multiplicity of sources in dispersed places, to the point where flows of information are beginning to rival payment flows in importance. It is easy to reach Revell's conclusion that, "The ultimate objective is that the corporate treasurer at head office shall have an up-to-the-minute summary of the cash position in all currencies on a single VDU [video display unit] on his desk; he will then initiate the larger transfers of funds-himself, leaving the bank computer to invest smaller amounts according to routines decided in advance."[24]

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[23] Revell, op. cit., p. 154.

[24] Ibid., p. 155.

Technological Innovation in Retail Services

Since many innovations in corporate and retail flow of funds often take place in the international side first, it is useful to study what is going on in the international marketplace to help project developments in the domestic arena.

One of the distinct differences between technological innovation in the U.S. financial service industry and that in foreign nations is the level of government subsidy of technical developments that affect the financial service industry. For example, the smart card, the applications and functions of which are discussed in chapter 2, was developed by the French Ministry of Post and Telecommunications (PTT). Although the card has other uses, it will be used for electronic banking, particularly for payments. The French have also conducted various trials in point-of-sale (POS) systems and have also introduced on a limited scale a videotex system that will eventually be capable of handling financial transactions. The charge for this service is provided to the consumer as part of his monthly telephone charge. The British videotex system, Prestel, was developed by British Telecom (BT, then part of the British Post Office), the telecommunications authority. Again, although the system has other applications, its service is in direct competition with other, commercially developed systems.

The developments outside the United States with respect to retail services are in many ways similar to the domestic innovations that have been described in previous sections. What differs in many cases is not the technology itself, but the commitment of the various governments and the structure of the financial service industry in a particular nation. Often, technological innovations are easier to implement under a regulatory structure that differs from the U.S. regulatory structure. For example, in Great Britain, BT and IBM are currently discussing an electronic POS system with the London clearing banks. Since the banking industry in Great Britain is highly concentrated, agreement with these banks (and assuming subsequent agreement with British retailers) will ensure a national POS system.

Some innovation in retail services takes place across national borders. Members of Eurocheque International recently agreed on a "eurocheque" ATM standard that will allow the crossborder use of the eurocheque guarantee card. VISA International plans a similar service on a worldwide basis. The impetus for much of this activity has been the growth of international travel and the consequent need by the traveler for ready access to bank accounts worldwide.

Vulnerability of the Financial System

The application of advanced financial information technologies occurs in nearly all industrialized nations and in many of the newly industrializing nations. This is in response to, and will further enhance, the ongoing growth of global economic activity and the increasing interdependence of national currencies, national markets, and national economic policies.

Expanding world trade, which is responsible to a great extent for this financial activity, is increasingly important to the U.S. economy. World trade relies heavily on the integrity of transnational transactions and payments; this in turn depends heavily on the reliability and security of the transborder flow of data.

As world trade has expanded, so too have the financial services to support it, not only in the actual support of trade through traditional bank lending and transfer mechanisms, but also in the provision of flexible money and capital markets. The use of new technologies in the financial service industry has facilitated the growth in volume of financial flows separate from but related to the payment flows associated with world trade. One aspect of these money and capital markets is the interbank transfer. The application of information technologies permits both the increased volume of these transfers and the participation of smaller, nonmoney center banks, thus helping change the character and structure of international banking.

Security and Integrity of the Financial System

Communication and information technologies have increased the interdependency of the participants within the financial system. The international financial system may now be more vulnerable than ever to upheaval, both economic and political, in foreign countries. At issue within this area is the question of the increased vulnerability of all parties to international events that results from communication and information technologies.

The technologies have created new opportunities for attacking systems for delivering financial services. System integrity, the ability of a system to recover from damage, is a salient issue when a significant portion of the required operations are performed without human intervention. For example, financial service institutions can be attacked by perpetrators electronically and off-site. Some systems have reached a stage of complexity where they can be backed up only with automated systems, and in the case of interruption to service, they can be restored to operation only with automated recovery procedures.

Error Resolution in International Electronic Funds Transfer

With increasing global interdependence and increasingly complex transactions, generally more than two parties are involved in a single transaction, and therefore a multitude of systems are also involved. The issue as defined here is that of responsibility in the case of loss or error. Simple bilateral contracts do not in all cases clearly place liability, especially when transactions involve multiple parties. It has been recommended that the party initiating the transaction be responsible, which is not acceptable to all parties.

There is a similarity between losses suffered under CHIPS or SWIFT and those under other payment systems. They can be classified in three ways: principal losses, interest losses, and losses resulting from foreign exchange fluctuations. "These losses may be caused by the delay of a transmission, the introduction of faulty information, or a participant's inability to settle the day's transactions. Delays and faulty information may arise from hardware and software failure, mistakes by personnel involved in processing the transaction, and fraud. The failure to settle, on the other hand, is usually caused by the failure of one of the transferring banks."[25]

Foreign Telecommunications and Information Policies

Although the force from within the industry is toward the flow of information throughout the world, integration of the world economy and the world financial system is by no means as simple as the integration of a domestic economy. Currencies, accounting methodology, and regulatory and supervisory structure all differ among nations. In support of trade activity, information flows across national boundaries: information which includes both personal and strictly financial data, information which travels via sophisticated telecommunications systems, and information processed by state-of-the-art technologies. These flows, known as transborder data flows (TBDF), have caused conflict and controversy among nations and between particular nations and multinational businesses. It is primarily the informational flows, rather than payment flows, with which most nations are ostensibly concerned.

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[25] Herbert F. Lingl, "Risk Allocation in International Interbank Electronic Fund Transfers: CHIPS and SWIFT," *Harvard International Law Journal*, vol. 22, No. 3, fall 1981, pp. 630-631.

Sovereign nations assert legitimate reasons for, and a right to, monitor and control TBDF. Primary among these reasons are protection of the privacy of their citizens, industrial development, and national security. However, sovereign rights and national information policy are frequently in direct conflict with the interests of large, multinational organizations, including financial service providers. This conflict of interest in turn can impede the progress of a global financial system and perhaps world trade.

As the information technology industry becomes increasingly important in international trade, more countries are seeking to protect their indigenous communication and information industries and are therefore creating legal barriers to the flow of information. This has an impact on the financial service industry, whose primary function is the distribution and processing of information.

The requirements of multinational and international finance include rapid communications and efficient data processing. Certain restrictions by foreign governments—e.g., that all data are processed locally—can severely hamper these activities. The current economies of data processing are such that it is more efficient to centralize the process.

For a variety of reasons, there have been suggestions that nations limit the flow of personal data across their borders. Some would limit the effects of restrictions to data identifiable with natural persons while others would include both natural and legal persons. Included has been the suggestion that limitations on TBDF be focused on curtailing the flow of data to nations that have not imposed privacy standards at a level consistent with those of the nation imposing them. However, much of the data of interest to the financial service industry pertains to specific individuals, and its movement across international borders would be affected by such restrictions. Therefore, limitations on TBDF could cause significant problems for the financial service industry, which finds demands for international services increasing.

The economic and industrial development justification of restrictions of TBDF have as their impetus the rising importance of information and communication technologies to the world economy. As traditional manufacturing industries stagnate and high-technology information industries grow, it is to every nation's advantage to encourage a sound, strong information industry. Although national policy strategies differ, it is evident that some nations have taken the route of protectionism. For example, Brazil has stringent requirements on the import of data processing equipment in order to encourage the growth of local industry. Until recently, little foreign competition was allowed in the large Japanese communications and information technology and services market. These types of activities, although they may protect indigenous industry, have a tendency to increase overall costs to users.

More specifically affecting the financial service industry are those national policies that threaten to discontinue access to leased lines, begin usage-sensitive pricing schemes, and demand that industry use local communication facilities. The objections of banks and other financial service providers is not only that this will increase their costs, but that transmittals over public lines make control over sensitive information more difficult.

National security concerns seem to center around the economies of scale and the lack of locational sensitivity in data processing. It is common for large corporations to center their processing facilities in one nation. For example, SWIFT's data processing and transmission centers for its 52 member countries are located in 3 countries: the Netherlands, Belgium, and the United States. Such centralization engenders the fear that sensitive information will be stored in a foreign country, or that a nation may be cut off from information in a time of national crisis. As SWIFT pursues domestic interbank markets, these fears become well-founded; it is entirely possible for one nation's domestic retail and interbank financial information to be stored at facilities outside its borders.

Chapter 7

The Consumer of Financial Services

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Chapter 7

The Consumer of Financial Services

Introduction

Consumers[1] of financial services have characteristics distinct from all other financial service user groups. Approximately 80 million households comprise this group; and as such, it is an important part of the U.S. economy. Household deposits provide the financial service industry with nearly $2 trillion in loanable funds. In addition, consumers have a diversity of needs and compose a highly segmented market. Consumers, in comparison to their use of other instruments, also make the least use of technology-based financial services and products.

It is readily accepted that although some movement has been made toward consumer acceptance of technological devices in banking, the time horizon for acceptance by the total population will be much longer than 10 years. There are currently some highly visible examples of the effect of technological change on this market segment (e.g., the rapid acceptance of automated teller machines (ATMs)), but certain institutional relationships have been affected little by the technology. As some new systems are implemented, however, and certain of the institutional problems with these implementations are resolved, the effects of technology on the consumer of financial services are bound to become more evident.

Historically, the banking sector of the financial service industry has been either enamored of or totally uninterested in pursuing the consumer as a potential customer. It appears, however, that competition is changing some of the indifference of banks toward this market. "It was not regulation or legislation that allowed nonbank institutions to exploit the opportunities available in upscale credit cards (American Express), in discount brokerage (Merrill Lynch), and in automated payroll services (ADP). Rather it was the failure of banks to engage in effective marketing and their lack of innovation and understanding of consumer attitudes that gave the near-bank competitors the upper hand in these product areas."[2] As a result, the consumer is beginning to wield more power in product development; recent events are changing consumer financial services from being product-driven to being market-driven. It is not clear, however, if all consumers are benefiting from these changes.

Consumer protection regulation has in the past dealt with the protection and fair treatment of consumers in the financial service system. Implicit in the formulation of public policy has also been the recognition of the potential impact of technology-based systems on the consumer. However, it is important to fully understand the changes taking place, their impact on the role and behavior of the consumer, what new issues will arise because of these changes, and existing issues that have not been adequately addressed.

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[1] The consumer, as defined here, is an individual user of personal financial services.

[2] Richard Rosenberg, Vice Chairman of Wells Fargo, as quoted in *The Retail Banking Revolution: An International Perspective*, Patrick Frazer and Dimitri Vittas (eds.) (London: Michael Lafferty Publications, 1982), p. 7.

Consumer Financial Services

Consumers seek financial services to facilitate payment, to balance current income against future consumption through savings instruments, to balance present consumption against future earnings with credit instruments, to secure growth in capital, and to safeguard their assets. A rational consumer who wants to maximize his objectives will desire control over the means (i.e., assets and income) to those ends. The degree of his control is measured by the extent to which his assets meet his needs.

In this regard, Professor William White, in his report to the Investment Company Institute, *The Outlook for Money Market Mutual Funds,* defines the demand of consumers for specific financial products and services as arising not from the particular product or service, but from features of the consumer and his environment. Demand arises first from the necessity for the individual consumer to meet certain basic needs, which can be classified as convenience, return, liquidity, security, credit availability, and, to some extent, personal service. The investment behavior of the consumer is related to the relative importance of each of these needs, which in turn is based on the individual's economic environment and his lifecycle stage. Also of importance is the less tangible factor of individual tastes and preferences.[3]

Consumer Savings and Investment Behavior

The term "investment" throughout this section is not used in its macroeconomic sense, that is, the purchase of capital goods. For this chapter the term means the commitment of money specifically to earn a profit, most often by purchasing securities. "Savings" are defined as asset accounts in which an individual accumulates funds for future consumption. For the most recent statement of total outstanding assets and liabilities for the household sector, see table 9.

The primary savings instruments used by individuals are time and savings deposits, pension funds, and home mortgages. In recent years, more consumers have begun using the money market fund for savings. The figures for 1982 do not reflect, however, the more recent movement of funds out of money market funds into their depository equivalent, money market deposit accounts. These figures will be reflected in 1983 end-of-year accounts.

Life insurance funds are also used for accumulating savings; however, because of their low rate of return, their primary function is insurance against risk. Individuals also invest a considerable amount in securities, both corporate and government.

Home mortgages, although they represent a liability relationship for the consumer, are, in effect, instruments of negative savings in which the consumer initially creates a debt relationship with an institution. However, as the consumer decreases his debt, he earns equity in the property; as the value of the property increases over time, it increases the net worth of the individual.

The relationship of assets to liabilities and the choice of instruments for investment varies with the age and income of the consumer. This is depicted graphically in figure 14. The primary earning years are between the ages of 20 and 70, when generally the consumer earns more than he consumes. With age, savings and investment behavior of the consumer changes. Generally, in youth, the consumer will be more consumption-oriented; as age and income progress, the consumer will be more future-oriented. The consumer's basic needs of convenience, higher return, security, liquidity, credit availability, and personal security often correspond with this lifecycle and directly influence which financial service and products he selects.

Although aggregate information on the savings habits of consumers reflects a propensity to invest, an overall tendency to save rather than borrow, and a pattern of savings highly correlated to age, consumers differ in their objectives for asset management. The financial service industry has recently begun to react to these differences and to provide services to meet very individual needs in addition to providing instruments that have widespread use (e.g., checking and savings accounts, bank credit cards, or mortgages).

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[3] William L. White. "The Outlook for Money Market Mutual Funds," *Report to the Investment Company Institute,* Sept. 30, 1982, pp. 28-29.

Table 9.—Household Financial Assets and Liabilities, 1982 (billions of dollars)

Assets:					
Deposit and credit market instruments	$2,781.3				
Deposits		1,982.7			
Checkable deposits and currency			307.3		
Small time and savings deposits			1,322.9		
Money market fund shares			206.6		
Large time deposits			145.9		
Credit market instruments		798.6			
U.S. Government securities			377.0		
Treasury issues				291.8	
Savings bonds					68.3
Other Treasury					223.4
Agency issues				85.2	
State and local obligations			129.0		
Corporate and foreign bonds			64.5		
Mortgages			186.5		
Open market paper			41.6		
Corporate equities	1,316.2				
Mutual fund shares		89.5			
Other corporate equities		1,226.8			
Life insurance reserves	1,316.2				
Pension fund reserves	935.3				
Security credit	16.0				
Miscellaneous assets	85.3				
Total assets	$5,381.0				
Liabilities:					
Credit market instruments	1,674.4				
Home mortgages		1,101.0			
Other mortgages		36.4			
Installment consumer credit		344.8			
Other consumer credit		85.9			
Bank loans n.e.c.[a]		33.3			
Other loans		73.0			
Security credit	28.8				
Trade credit	22.2				
Deferred and unpaid life insurance premiums	15.5				
Total liabilities	$1,740.9				

NOTE: Households include not-for-profit organizations.

[a] Not elsewhere classified.

SOURCE: Board of Governors, Federal Reserve System, *Flow of Funds Accounts*, August 1983.

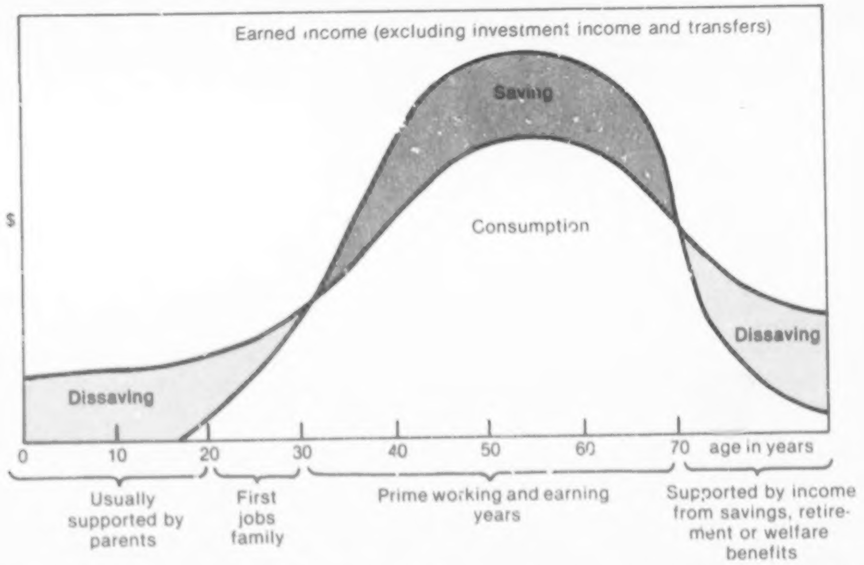
Providers of Consumer Financial Services

For the most part, consumer needs cannot be met without the assistance of an intermediary that provides access to payment systems and markets, expert knowledge and advice, the pooling of a large number of individual risks (as with insurance protection), or a diversified portfolio for a minimum investment (as with investment companies).

In the past, consumer financial institutions specialized in individual products and services. As a result there were some institutions that provided for the payment needs of the consumer, some which provided for his/her savings and credit needs, and still others that provided for his/her insurance needs. Regulation tended to support this specialization. Recent trends in the marketplace and in regulation are beginning to break down the strict distinctions between institutions. Many consumers are adapting readily to the changes and are changing traditional relationships with some financial institutions.

Prior to these recent events, the most widely recognized financial relationship for the consumer was with a depository institution, especially with a bank. Banks provided the consumer access to the payments mechanism through checking accounts and met some credit and savings needs. Savings institutions pro-

Figure 14.—Lifecycle of Consumer Needs



For the purposes of the financial services industry, people do not become consumers (do not buy) financial services usually until at least their teens:

General age	New financial activities	Resulting financial service(s) requirements
Teens-20's	First jobs (though often still with parent support). Often, college. Often, car or other major purchase.	Transaction accounts, simple savings accounts or instruments (e.g. U.S. savings bonds). Education loans. Auto or other loans. Auto insurance.
20's	First home purchase or more saving to prepare for home purchase. Marriage and first children. Related: perceived need for greater security to protect family.	Home mortgage. More sophisticated savings instruments. Various loans (general credit). Insurance, savings life, health, home insurance.
30's 60's	Prime working and earning years: Higher income. Larger saving base being built, as foundation for children's education and other expenses, and for old age. More business travel. More income for personal travel. High % of time working, especially two career couples (2 earner families): result - need for greater convenience in transactions, more mail order and overall purchases.	Tax shelters. More sophisticated investment vehicles: securities, money target funds, real estate, insurance purchases. real-estate pension plans. Financial advice often desired. Traveler's checks, travel and entertainment credit cards. Cash dispensers, debit cards.
60's	Often retirement or less working time, more leisure, less earned income.	Financial advice, to plan for supporting a standard of living lesser risk, higher current income (securities), investments, pension trust, estate planning.

SOURCE: William L. White, "The Outlook for Money Market Mutual Funds," 1982.

vided savings and mortgage services. Credit unions provided services similar to those provided by both commercial banks and savings institutions.

Recent research shows that the typical consumer deals with only one or two banks and will accept fairly standardized products.[4] However, it also shows that there is very little consumer loyalty toward a particular institution; if another institution can meet the needs of the consumer better, the consumer usually moves his business. A consumer "wants to be able to use a credit card to purchase goods and services from merchants, and he wants to be able to use a piece of plastic (preferably the same one, perhaps) to obtain cash from a machine. He does not care who issued the card or who wrote the programs accessing the machines any more than he cares who manufactured the machine."[5] This has been borne out by the rapid movement of funds out of traditional deposit accounts in the 1970's to accounts with a higher rate of return. In the past, most so-called consumer loyalty was illusory in that banks had a monopoly on certain types of transaction accounts and often had a geographic monopoly, as well.

Individuals with higher discretionary incomes, a desire for high growth of assets, and lower risk aversion will generally have a relationship with a securities house. High income, or, in its place, low risk aversion, was generally necessary to offset the risk associated with the instruments offered through these institutions.

It is evident that consumers have also had fairly complex financial relationships with nontraditional financial service providers. Historically, retailers have extended credit to their customers to purchase goods and services. From this has developed a fairly substantial number of consumers with revolving credit lines, and credit cards to access these lines of credit. Sears and J. C. Penney have two of the largest card bases in the United States and have filled certain consumer financial needs for years. Both are favorably placed in the financial service marketplace because the consumer recognizes their names. As the consumer becomes used to nontraditional providers of financial services, he may willingly accept retailers as providers.

Consumers may obtain cash from a variety of other places besides banks; for example, individuals routinely cash checks at a grocery or convenience store solely for the purpose of cash acquisition. Although these retailers are not financial institutions in the traditional sense, they certainly have provided consumers with financial services in the past. Grocery stores have used check guarantee systems for a number of years, and as mentioned earlier in this report, some are beginning to offer more technologically sophisticated services—for example, onsite ATMs.

The ways in which the financial service industry is changing are described more fully elsewhere in this report. The effect of these changes on the consumer has been to offer him a greater realm of choice in the institutions with which he can do business.

Consumer Payment Methods

Like the business sector, the consumer requires payment mechanisms to acquire goods and services. Recent research has postulated that a consumer seeks as many as 11 specific attributes in a payment system: budgeting, documentation, reversibility, spending control, transaction record, leverage potential, acceptability, transaction time, transfer time, social desirability/prestige, and security.[6] Each consumer will choose his method of payment according to his priorities and to his perception of a particular method as having the specified attributes.

By far, the most commonly used medium of exchange for point-of-sale (POS) purchases is cash, particularly for small transactions. The primary attributes of cash are convenience and acceptability. Since cash is universally negotiable and requires no personal identification for use, cash transactions also have the additional attribute of privacy; however, these same qualities make cash a less secure medium of exchange. For the approximately 17 percent of all households that have no relationship with a financial service institution, either cash or (in specific instances) money orders or cashiers' checks, are the only instruments of payment available.

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[4] Arthur D. Little, Inc., *Issue and Needs in the Nation's Payment System*, The Association of Reserve City Bankers, April 1982, p. 35.

[5] Paul Horvitz, *American Banker*, New York, Sept. 24, 1982.

[6] Elizabeth C. Hirschman, "Situational Perception of Product Prototypes Within the Product Class of Consumer Payment Systems," *The Journal of General Psychology*, vol. 106, 1982, p. 127.

Many consumers use checks to meet these needs. Studies show that the consumer's use of checks has consistently been in the range of 50 percent for bill payment, 31 percent for retail purchases, 9 percent for payments to other individuals, and 8 percent for cash acquisition.[7] The figures for cash acquisition are probably low, since many checks written to retail institutions are actually for acquiring cash. In 1979, consumers' checks accounted for approximately 53 percent of all checks written, or 17 billion transactions.[8]

Until the 1950's, the personal check was truly the only widely used alternative to cash for payments. In recent years, however, the check has become less negotiable; consumers frequently are required to have additional identification and some proof of creditworthiness in order to use a check for POS purchases. In part, the decreasing negotiability and lack of national acceptance of the check led to the explosion in the availability and use of other payment mechanisms for the consumer—e.g., traveler's checks, retail credit cards, travel and entertainment (T&E) cards, the bank credit card (in the 1960's), and, most recently, the debit card.

The traveler's check and the T&E card provided the consumer with payment mechanisms more negotiable than the check, with attributes of convenience and acceptability, yet more secure than cash. T&E cards are charge cards and, except in certain instances, do not provide long-term credit to the consumer. When they were introduced, the consumer did not have highly developed credit needs. T&E cards met the additional consumer needs of spending control and leverage potential. In addition, the high membership fees and apparent exclusivity of the cards provided a sense of social prestige. Although it was thought that with the introduction and widespread use of bank credit cards, the number of T&E cards in circulation would dwindle and their usefulness would be outdated, their number has actually grown.

Bank credit cards[9] are used in most cases as an alternative to cash or checks for POS transactions. Their line of credit added flexibility to consumer payment mechanisms. Bank cards are perceived by the consumer to be more acceptable and less time-consuming to use than checks and less risky than cash. They also provide the consumer with proof of payment, which facilitates returns or reimbursement. The majority of credit card users do not actually use the credit option associated with the card, paying instead the full amount owed each month.[10] The card is viewed more as an instrument of cash management. Tables 10 and 11 show overall consumer holding and use of credit cards.

Table 10.—Credit Card Holding
(families holding cards as percent of all families)

	Year			
Type of credit card	1977	1978	1981	1982
Any	63	64	66	70
Gasoline	34	34	30	35
Bank	38	40	45	51
General purpose[a]	8	10	14	14
Retail store	53	50	57	63
Other[b]	6	5	7	NA

[a] Travel and entertainment cards.
[b] Includes airline cards, car-rental cards, and others not classified elsewhere.
NA—not available.

SOURCE: Data collected for the Federal Reserve Board by the Survey Research Center, University of Michigan.

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[7] See *Economic Review*, "Special Issue: Displacing the Check" (Atlanta, Ga: Federal Reserve Bank of Atlanta, August 1983), p. 8.

[8] Ibid., p. 26.

[9] The term "bank credit cards" is rapidly becoming somewhat of a misnomer. This term commonly refers to VISA and MasterCard interchange cards, which in the past were issued by banks. However, these cards (although for the most part still issued by banks) now provide access to a variety of accounts, including central asset accounts offered by securities houses.

[10] *Economic Review*, op. cit.

Table 11.—Credit Card Use
(families using cards as percent of all families)

	Year				
Type of credit card	1971	1977	1978	1981	1982
Any	50[a]	60	62	62	NA
Gasoline	33	31	32	27	31
Bank	19	25	37	39	47
General purpose[b]	5	7	9	12	13
Retail store	45	50	48	51	57
Other[c]	NA	4	3	5	NA

[a] Data for 1970.
[b] Travel and entertainment cards.
[c] Includes airline cards and car-rental cards.
NA—not available.

SOURCES: *1970 Survey of Consumer Finances; 1971-72 Survey of Consumers;* and data collected for the Federal Reserve Board by the Survey Research Center, University of Michigan.

In the 1970's, considerable speculation developed about a future "cashless society" (i.e., a system where cash as well as checks would become obsolete, having been replaced by electronic payment mechanisms). However, despite the growth of electronic alternatives, the use of checks as a method of payment continued to grow at approximately 5 to 6 percent per year throughout most of the 1970's and has only recently begun to slow. It still continues to increase at about 2 percent per year.

Traveler's checks and credit cards do not require a check be written at point of sale; however, the majority of them rely on the check for reconciliation of accounts. The only instruments besides the check that provide the consumer direct access to his account are the debit card, preauthorized payments, and ATM payments. In 1979, 97 percent of all debits to individual accounts were by check. The other 3 percent of debits to consumer accounts were distributed thus: 1.3 percent to preauthorized paper drafts, 0.4 percent to preauthorized automated clearing house payments, and 1.1 percent to ATMs.[11] The current system is merely a reflection of the acceptance of these alternative media rather than an example of one replacing the other.

Growth of Consumer Credit

The relationship of the consumer to the provider of financial services has grown increasingly complex. In the early part of this century, households operated almost entirely on a current basis; using credit was an indication of mismanagement of household accounts. Prior to the 1930's, credit relationships with financial institutions were not common. Retail establishments were more likely to extend credit in direct relationship to consumer purchases. At that time, it was postulated, households could manage credit to help balance current consumption wants and needs against future income.

Since then, as described earlier in this report, there has been an exponential growth in consumer credit and in institutions and instruments to serve these needs. In the 20 years from 1960 to 1980, total household liabilities as a proportion of total household assets grew from 21 to 35 percent.[12] This growth also reflects, in part, a change in attitude by the consumer. Credit is no longer the last resort of a mismanaged household, but a means of improving one's living standard.

The primary long-term instrument for decades was the installment loan, where a bulk sum was borrowed by the consumer from a bank or consumer finance corporation to finance a large-ticket purchase of a durable good, and repaid in installments over a specified period of time. Another example of consumer credit was the retail revolving account, in which a consumer could charge a particular amount on store-granted credit and repay the outstanding balance monthly.

In the 1960's the first bank credit cards were introduced, adding yet another source of consumer credit. As mentioned previously, the bank card is used primarily for its convenience; however, the credit uses of these cards, which were innovative when introduced, deserve exploration.

The bank card offers essentially two types of credit options for the consumer: short-term credit to bridge cash shortages between paychecks and longer term installment credit. The latter is provided with only one credit application, the consumer may borrow the exact amount he wishes within his credit limit and have considerable payment flexibility. About two-fifths of credit card holders use these options on a regular basis.

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[11] Ibid.

[12] Board of Governors, Federal Reserve System, *Flow of Funds Accounts,* August 1983, September 1979.

Recent Innovations in Consumer Financial Services

In the past decade, inflation, interest rates, and the lifting of particular banking regulations have affected how consumers manage their assets. Events of the last decade have increased the number of investment options open to the consumer of financial services and expanded the range of consumers who use these services. For example, tax-exempt income is available to all consumers through Individual Retirement Accounts (IRAs), and money market funds and money market deposit accounts allow the small investor access to high interest rates.

Nontraditional Providers and Instruments

Recent changes in the industry have also affected the way the industry provides financial services to the consumer and have introduced new players to the marketplace. In the 1970's, the inflation rate and the resultant high opportunity cost of standard consumer savings instruments led to a phenomenon known as "disintermediation." Funds flowed out of the depository institutions into nontraditional instruments and institutions. New instruments were created outside the interest rate-regulated environment of the banking community. One of these, the money market fund, allows the small saver to earn higher interest rates and thereby preserve assets. This instrument is a particularly appealing alternative because it also offers checklike privileges through share drafts. Although there is usually a minimum amount the consumer can withdraw from his account with a draft, in many cases it meets his liquidity needs.

The initial target of these funds was the so-called upscale market; that is, those individuals with relatively high discretionary incomes and minimal risk aversion. In time, as double-digit inflation continued and the spread grew between interest earned in these funds and that earned in bank time deposits, other, more risk-averse individuals began investing in these instruments. This phenomenon was partly responsible for the movement within Congress to deregulate parts of the banking industry, a movement that eventually allowed depositories to offer accounts bearing higher, more competitive interest rates.

In response to competition and profit opportunities, depository institutions have also begun offering discount brokerage services to their customers, making it possible for some consumers to meet a number of their savings and investment objectives with one firm. However, since banks are not allowed to offer advice on investments, except in the case of trust customers, this service is still limited to a financially sophisticated class of consumers. On the other hand, nondepository institutions, such as securities firms, have added services that have the appearance of depository instruments, yet the qualities a consumer seeks for managing his assets. Since consumer perception of the instruments is the same, a consumer may not differentiate between the two choices.

The Depository Institutions Deregulation and Monetary Control Act of 1980 provided new opportunities for the consumer. This act allowed depository institutions nationwide to offer NOW accounts through which the consumer earns interest on an account that is not differentiated in use from a checking account. These accounts already comprise one-third of all checkable deposits.[13] Also enacted by the same legislation was the provision that federally chartered savings and thrift institutions could offer consumer loans for up to 20 percent of assets.

Complexity of the Marketplace

The present marketplace offers greater choice yet greater confusion for the individual.

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[13] Board of Governors, Federal Reserve System, *Money Stock Measures and Liquid Assets*, Dec. 30, 1983.

The consumer must be more aware of the particulars of investment and must deal with a changed environment that no longer offers him standard investment opportunities keyed to his position in life. The result is an increasingly complex relationship between financial institutions and the consumer.

For example, high and uncertain interest rates also led to an industry-led innovation in the home mortgage market. During the 1970's, the variable rate mortgage was introduced. In addition, the equity loan was introduced into the home mortgage market. This loan, which allows a homeowner access to the equity in his home, is much the same as a second mortgage; however, second mortgages are traditionally used for specific purposes such as home improvements. Most of the promotion of these loans, under the rubric of "credit management," encourages their use for virtually all purposes, exposing the consumer to the loss of his home if he is unable to meet payments on the loan.

The solution to this situation is not necessarily to increase the information available to the consumer. Often educational differences or a predisposition by the consumer precludes him from processing the information in a way that would facilitate his decisionmaking. And, it is likely that particular groups of individuals will be more affected than others. Certain groups may be at particular disadvantage; for example, the elderly and the uneducated.

There is also some question whether there will be a conflict if the provider of services is also the major provider of information about these services. For the most part, only wealthy individuals have access to financial advice, either through bank trust departments or securities brokers. Discount brokerages provide access to financial markets for less wealthy consumers, but without the advice function. Middle-income consumers have in the past relied on banks for some financial advice, but in more complex systems, banks are often not in the position to offer sound advice to this segment of the consumer markets, owing to a lack of trained personnel. Technology may also push these consumers out of the bank, further limiting their access to information services.

Technology-Based Services

There is little evidence to support the notion that consumers specifically demand technology-based services; the demand for services is still a reflection of the overall needs of the consumer. There is perhaps a particular class of consumers, referred to as "innovators," who willingly accept new technological applications. The market for these services evolved as the consumer discovered that technology-based services had specific attributes of remote location and self-service and that they provided a payment alternative. The use of technology in financial services can help alter consumer demand for financial services by providing him easier access to his assets.

Some financial service innovations mentioned in the previous section were facilitated by technological change; e.g., variable rate mortgages require information-processing facilities in order to be cost effective. This section distinguishes between those innovations that require technology in the backroom sense and those that require the consumer to have direct contact with the technology or those where technology changes the behavior of the consumer with respect to financial services.

Previous sections of this report illustrate the way that communication and information technologies have affected the way the financial services industry operates. The informational nature of the financial service product led to the early application of automation in this industry, particularly in internal and intra-industry operations. However, when these technological solutions were applied to the marketplace, especially as new products and services in the consumer segment, the benefits were not so clear nor the implementations so easy. In particular, when depository institutions attempted to transfer their cost-saving technological solutions to the consumer market, they were faced with a diverse, often reluctant market.

Consumer Acceptance of Technology

Some attempts at introducing technology-based products and services to the consumer of financial services succeeded and some failed. It became evident from these attempts that technological solutions had to consider consumer need. Examples of such new technologies include ATMs, automatic direct deposit systems, preauthorized payments, POS funds transfer and check guarantee, and home information systems, most of which have been described in previous sections of this report. What follows are descriptions of consumer acceptance and attitudes toward these technologies.

Automated Teller Machines

The ATM is an example of electronic funds transfer (EFT) that is highly visible to the consumer of financial services. By 1981, the Bank Marketing Association (BMA) reported that nearly 100 percent of the population was aware of ATMs.[14] Of that figure approximately 32 percent actually use an ATM for financial transactions, which is an increase from 10 percent in 1977. When further broken down, this figure reveals that only slightly more than half of the 32 percent use an ATM more than once every 2 weeks. The growth of ATM use has followed the typical pattern of technological diffusion—that is, from initial use by "innovators" to rapid, widespread use. The Federal Reserve Bank of Atlanta in a recent analysis of check displacement has estimated that the saturation level for the ATM will be reached when the percentage of actual users reaches 65 percent of all possible users.

The primary pattern of use of an ATM is for cash acquisition. According to Linda Fenner Zimmer, a noted ATM consultant, the pattern of use of the ATM has remained relatively constant since its introduction: cash withdrawals represent approximately 75 percent of the volume of use of ATMs; deposits, 19 percent; balance transfers, 4 percent; and payments, 1 percent.[15] It should be noted, however, that the value of deposits received at an ATM far exceeds the value of withdrawals. Also, ATM cash withdrawals tend to be for amounts that are half the value of withdrawals facilitated by a human teller.

Also interesting to note is that use of the machines during normal banking hours is increasing, which represents a change in consumer attitude about the primary attributes of the machines. Originally, ATMs were seen as convenient for obtaining cash 24 hours a day. In this sense they were direct competitors with retailers who provided this service. However, with the change in pattern of use during banking hours, there is some indication that they are beginning to replace the human teller as a source of cash. This is partly due to the greater reliability of the newer machines and to the increasing acceptance of the machines by a greater number of people. In many cases, the institution deploying the ATM encourages its use in order to lower the per-transaction cost of the system and therefore the costs to the institution.

Research shows a strong correlation between age and ATM use. The most frequent user of an ATM is young; use peaks in the 25- to 34-year-old range, with a dramatic fall-off in use among members of the population over 65.[16] There is some evidence that those younger than 25, although not frequent users of ATMs, have a high level of acceptance, and when they establish firmer relationships with financial institutions, they too will become frequent users of the technology. It is expected that the age factor will become less important with time, although when is unclear.

Isolated experiences indicate that one factor that can hinder the use of ATMs by the elderly is inexperience with technology. In certain situations, by providing the elderly customer with assistance, many of these reservations can be overcome. However, this will not always be the case, and it cannot be overlooked that convenience and remote location

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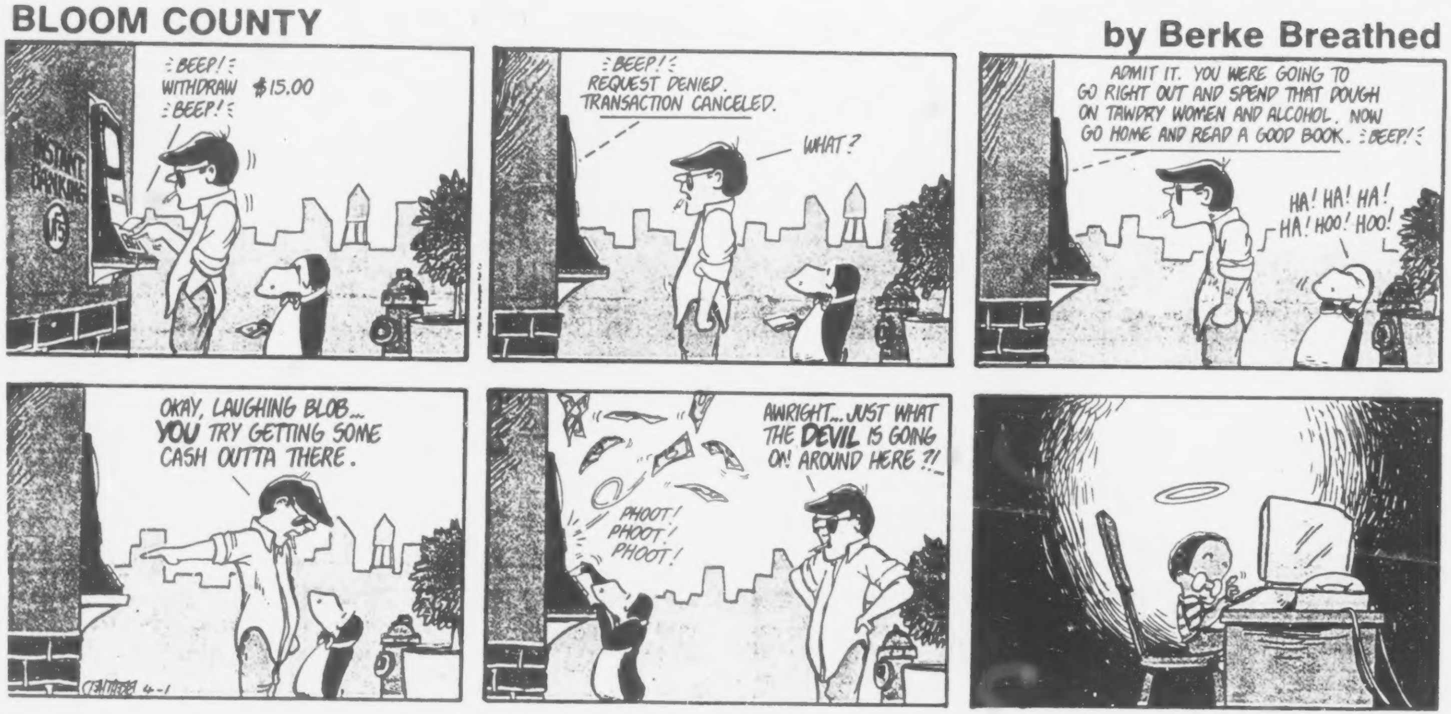
[14] Bank Marketing Association (BMA), *Payment Attitudes Change Evaluation* (PACE III 1981), Chicago, p. 2.1.

[15] *Economic Review*, op. cit., p. 17.

[16] Bank Marketing Association, op. cit., p. 2.50.


BLOOM COUNTY
by Berke Breathed
INSTANT BANKING
BEEP! WITHDRAW $15.00 BEEP!
BEEP! REQUEST DENIED. TRANSACTION CANCELED.
WHAT?
ADMIT IT. YOU WERE GOING TO GO RIGHT OUT AND SPEND THAT DOUGH ON TAWDRY WOMEN AND ALCOHOL. NOW GO HOME AND READ A GOOD BOOK. BEEP!
HA! HA! HA! HA! HOO! HOO!
OKAY, LAUGHING BLOB... YOU TRY GETTING SOME CASH OUTTA THERE.
PHOOT! PHOOT! PHOOT!
AWRIGHT... JUST WHAT THE DEVIL IS GOING ON! AROUND HERE?!

SOURCE: Washington Post

are not always important to the elderly consumer of financial services. Tradition and the human factor can play important roles in this group's use of financial services, and therefore in their acceptance of technological services.

Automatic Direct Deposit

In an automatic direct deposit system, some form of income is automatically deposited in an individual's account on a regular basis. Examples include direct deposit of Social Security checks by the Government or of payroll by the private sector. Direct deposit is another example of technology-based service of which the general population is nearly 100 percent aware. According to the 1981 BMA survey, 36 percent of respondents' households use automatic deposit, and 80 percent of these had a very favorable opinion of the service.[17] In the 5 years between 1978 and 1981, penetration of direct deposit of Social Security benefits grew from 11 to 33 percent of all such payments. It is the eventual goal of the U.S. Treasury that all Social Security payments be made by direct deposit.[18]

The premise on which direct deposit is sold, particularly with respect to Social Security payments to the elderly, is that it decreases consumer vulnerability to theft. Other aspects of the service to which the consumer responds favorably are convenience, the speed of account crediting, and the regularity of deposits (particularly when the recipient is out of town). On the other hand, the consumer perceives the system raising service charges on his account and providing increased access to others of his personal account information.[19]

Telephone Billpayer

Telephone billpayer systems are not always fully automated, but are considered here because they represent an innovative use of technology—in this case, the telephone—to facilitate consumer payments. Telephone billpayer services are an example of consumer reluctance to use a service to meet needs which they believe are adequately met through other services. Acceptance of this method of payment has not been very high, and there has been little growth in the service in the past few years.

Point-of-Sale Systems

There is little substantial information on consumer attitudes toward POS debit systems or POS check guarantee systems. In general, most consumers are unaware of these systems, except in areas where there have been trials. The introduction of the debit card in the United States was closely tied to consumer reaction to early POS experiments. Consumers found they did not care to carry basic necessities on credit cards.

Home Information Systems

Home information systems are described at length in chapter 4. There is little agreement on the potential for consumer acceptance of this service. One of the major constraints to its growth is the pricing of the systems. There is currently a great debate about what people will pay for these services and about what they perceive the value of these services to be. While these questions remain unanswered, it is difficult to say how rapidly the services will grow and when and if they will become a mass medium and therefore open to every level of consumer.

Once more, the perceived market for the service is the upscale consumer. To the consumer who earns less than $40,000 per year and writes few checks, the system may not be cost effective. For the time being, pricing of both equipment and the services may preclude the participation of the lower income consumer in this case.

Pricing Structures

Past financial services were often perceived by the consumer to be free or, relative to other expenses, inexpensive. There was either no charge or a minimal "service charge." Financial institutions earned their profit through the difference in explicit and implicit rates charged on assets and paid on liabilities. Through competitive and economic pressures this spread narrowed, and the income to banks therefore decreased.

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[17] Ibid. p. 3.4.

[18] *Economic Review*, op. cit., p. 33.

[19] Bank Marketing Association, op. cit.

Fee income makes up an increasingly large portion of overall bank income. All evidence indicates that this trend will continue, the pricing structure in the future will be cost-based, and service will be explicitly priced.

In addition, pressures from outside the industry are increasing the price of service to the consumer. For instance, as it becomes more important for the individual to be informed fully in order to make profitable decisions, the cost of information also becomes a factor. A number of such exogenous forces affect the total cost of service to the consumer.

Opportunity Costs

Based on evidence that financial decisionmaking is becoming more complex for the consumer, opportunity costs are paid because of the greater amount of time the consumer will have to spend in order to make the correct investment. When interest rates are high, the opportunity costs, in the form of foregone income from higher rate investments, are greater. Some of this cost will be lessened by deregulation of interest rates paid on deposits.

Information Costs

In order to make profitable decisions, the consumer needs access to more information than previously and will most likely have to pay for this information. In its current form, information is not always accessible to the consumer. Again, it is questionable whether the consumer will willingly pay for information. For the wealthier, upscale consumer, for whom the return is obvious and greatest, there may be a willingness to pay for information. In general, one of the questions facing providers of electronic information is how valuable does the consumer perceive the information to be and therefore how much will he pay?

Communication Costs

It seems inevitable that local communications costs will rise; however, at what rate is still uncertain. The eventual price to the consumer will depend on the structure of Federal regulation of local rates and, barring Federal regulation, the decisions State governments make about regulation of the communication industry. If home information systems become the major way for consumers to obtain information and transact business, the communication costs of these transactions could also rise.

Competition and Costs

In an economic sense, competition is considered good for the consumer in the aggregate: it results in greater options at lower price. Increased competition in the financial service industry has provided the consumer with increased options. Although products and services are now explicitly priced, they may well be cheaper to the consumer because he will receive higher return on assets. However, if other investment motivations of the consumer are considered—e.g., security of assets—the relationship of competition to the relative position of the consumer is less clear.

To really judge the effect of competition on the consumer, the distinctions between the various market segments must be maintained. The consumer with a high discretionary income may benefit from increased choice and from instruments with a higher rate of return. To those who consider financial institutions essentially service organizations and the safekeeper of funds, the high fees for very limited service may place them in a situation where they are worse off than previously. They may have fewer choices in a competitive environment than in a regulated environment.

In his study *Banking and Electronic Fund Transfers: A Study of the Implications,* J. R. S. Revell states that price is the single most important factor affecting the long-term growth of acceptance of EFT services. If the trend in financial service fees continues toward cost-based, or explicit, pricing, there will eventually be an economic incentive for individuals to use EFT. Some financial institutions have already begun to price their services accordingly and are encouraging migration to newer, technology-based services and delivery mechanisms through pricing strategies.

Public Policy and the Financial Service Consumer

An important policy objective of the legislation of the 1930's was to provide for the safety of consumer deposits. This was accomplished through regulations designed to ensure the overall safety and soundness of the system and Federal deposit insurance programs.

Deregulation has made it possible for a number of new institutions to enter the battle for consumer funds. A diversity of institutions now offers similar products to the consumer; one of the major differences between them, however, is the extent of their regulatory control. Depositories are, for the most part, insured and therefore provide a certain level of protection to the consumer. Adherence to certain safety and soundness regulations required of depositories is not required of other financial institutions. However, these noninsured institutions offer services similar to those offered by insured institutions and have, in fact, drawn accounts away from the insured institutions. Only the effect on the consumer, not the equity, of this situation for the various institutions, will be discussed here. Important effects are those which are perceived by the consumer and therefore are reflected as changes in investment behavior and those which are imperceptible to the consumer but may have long-term impacts on his relationship with the financial service industry.

In a recent survey of investor protection provided by various financial intermediaries, the U.S. General Accounting Office found a number of gaps and overlaps in the protections offered depositors and investors. This information is summarized in table 12, which illustrates the variance in investor protections provided to both individual and group investors under different financial arrangements.

Under current Federal and State regulatory structure, the consumer's deposits at a particular depository institution will be covered up to $100,000. In 1970 the Securities Investor Protection Corp. (SIPC) was established by an act of Congress, to protect the investor from nonmarket losses involving funds and securities held by broker/dealers. These losses will occur usually only if the institution goes into insolvency.

Investment companies currently offer no form of direct protection for the consumer's assets. This is of increasing importance since recently more consumers are investing in the instruments of investment companies—i.e., the mutual fund and the money market mutual fund. The consumer is covered neither for market losses nor for losses that are the result of mismanagement. It appears that many consumers consider the money market mutual fund a higher interest-bearing type of deposit, and are not aware that their accounts can be subject to movements in the marketplace. Although these firms are not federally insured, their investment policies provide either complete assurance (when they invest in Treasury bills and insured certificates of deposit) or known risk.

Regulations Relating to Consumer Finance

Product-line extension has allowed new players into the financial service marketplace. Many different types of financial institutions now offer the same services. In many cases the difference between choices among instruments is imperceptible to the consumer in that it is related to the regulatory structure of the in-

Table 12.—Summary of Variances in Regulation and Investor Protection

Type of institution	Insurance coverage	Who insures	Insurance backed by	Regulator responsible for	Entities involved in establishing rules and regulations	Investor protection primarily provided by	Types of services provided	Rate of return	Advertising
Depository institutions:									
• Banks • Savings and loan • Credit unions	$100,000 per account	Federal insurance programs, and State-sponsored insurance programs	Federal insurance programs-full faith and credit of U.S. Government[a] State-sponsored insurance programs—no one[b]	Banks-FRS, FDIC, OCC, State authorities Credit unions, NCUA, State authorities	Federal and State depository institution regulators	Onsite examination and account insurance	Deposit accounts, checking accounts, commercial and personal loans	Variable	Subject to regulatory requirements
Securities brokers	$500,000 ($100,000 cash) per account	SIPC[c]	U.S. Department of Treasury[d]	SEC	SEC and securities industry self-regulatory organizations	Information disclosure requirements, SRO onsite examinations, and market surveillance	Securities trading	Subject to strict legal and regulatory requirements	—
Investment companies	None	Not insured	N/A	SEC	SEC	Information disclosure requirements and onsite examinations	Investment services	Variable	Subject to strict legal and regulatory requirements
Commodities brokers	None	Not insured	N/A	CFTC	CFTC and commodity futures industry self-regulatory organizations	Information disclosure, SRO onsite examinations, and market surveillance	Commodities trading	Subject to regulatory requirements	—
Commercial bank trust departments	Only funds on deposit in insured accounts	Not directly insured	N/A	OCC, FDIC, FRS	Federal and State banking authorities	Onsite examinations	Personal investment, corporate trust pensions	Variable	Not strictly regulated

[a] Federal insurance programs have lines of credit with the U.S. Treasury as follows: FDIC $3 billion, FSLIC $750 million, and NCUA $100 million.

[b] The Pennsylvania Deposit Insurance Corporation has a $10 million line of credit with the Pennsylvania State Treasury.

[c] SIPC insures securities investors against nonmarket losses only.

[d] SIPC has a $1 billion line of credit with the U.S. Treasury.

KEY: NA = not applicable. FRS = Federal Reserve System. FDIC = Federal Deposit Insurance Corporation. OCC = Options Clearing Corp. NCUA = National Credit Union Administration. SEC = Securities and Exchange Commission. CFTC = Commodity Future Trading Commission.

SOURCE: U.S. General Accounting Office.

dustry. As a result, the consumer also may perceive his relationship with banks and nonbank institutions to be the same.

In choosing between similar instruments, it is difficult to assess the extent to which it is necessary for the consumer to be aware of these regulations. Certainly it is necessary that he know his rights and liabilities with respect to the use of certain instruments. Toward this end, Congress requires that certain disclosures be issued to the consumer. However, often the consumer does not read nor fully understand his rights and responsibilities. This is even more important as services become more complex.

When legislation was first enacted to ensure the safety and soundness of the system and to protect consumer deposits, the economic activity of the consumer was quite different than it is now. Legislation of the last two decades recognizes some of the changes in consumer behavior and his role in the economy, particularly with respect to credit.

Increased consumerism has been an important factor in the formulation of policy in this area. Consumer protection legislation enacted in this era includes the Consumer Credit Protection Act of 1968 and subsequent amendments, the Fair Credit Reporting Act, the Truth in Lending Act, the Equal Credit Opportunity Act, the Fair Credit Reporting Act, and the Electronic Funds Transfer Act, among others. Each represents additional protection of the consumer of financial services from discrimination and unfair practices. Consumer protection legislation plays an important role in the relationship between the consumer and provider of financial services, as does the regulation derived from this legislation.

Consumer Credit Protection Act

The following congressional acts are consumer-oriented, and most are amendments to the Consumer Credit Protection Act of 1968. That act was one of the first major pieces of consumer credit legislation passed. Federal Reserve Board Regulations Z and M implement Title I of the act, the purpose of which is to help consumers become fully informed about credit and leasing arrangements and to prevent advertising that may be misleading. Title I applies to any institution that regularly offers credit and leasing plans to people involved in transactions for personal, family, or household purposes. This includes consumer finance institutions, banks, credit card companies, and retailers who extend credit.

Regulations Z and M

Covered under Regulations Z and M are three separate acts:

- *Truth in Lending (Regulation Z)*—This act covers closed-end and open-end consumer credit transactions. The primary purpose is to disclose the costs and terms of credit arrangements prior to their consummation so that consumers can compare various plans and fees on an informed basis.
- *Fair Credit Billing (Regulation Z)*—This act affects the manner in which customers are billed on their open-end credit accounts, and how finance charges are calculated, and the way that disputes about the billing can be resolved.
- *Consumer Leasing (Regulation M)*—This act extends Truth in Lending to cover leasing arrangements.

Other amendments to the Consumer Credit Protection Act:

- *Equal Credit Opportunity Act*—Owing largely to the activities of consumer groups, Congress acknowledged credit as a necessity for the consumer in the Equal Credit Opportunity Act of 1974 (ECOA). ECOA prohibits discrimination in credit transactions on the basis of sex or marital status and, as later amended, prohibits discrimination on seven additional bases, including race, age, and national origin. In this act, Congress also recognized the importance of credit to the consumer.
- *Fair Credit Reporting Act*—Title VI of the Consumer Credit Protection Act, effective in 1971. The purpose of this act

is to make certain that credit reports on consumers are fair, current, and accurate. It gives the consumer certain rights to examine credit information about himself and to correct any errors that might be present. In addition, the act imposes other responsibilities on the credit reporting agencies—i.e., they must make certain that all users of their information are obtaining reports for legitimate purposes.
- *Fair Debt Collection and Practices Act*—This is Title VIII of the Consumer Credit Protection Act, which became effective in 1978 and limits the amount of communication with a delinquent consumer and prohibits undue harassment and specious activities in connection with consumer debt collection.

Electronic Funds Transfer Act

The Electronic Funds Transfer Act (EFTA) amended Title IX of the Consumer Credit Protection Act by establishing rights and responsibilities for EFTs. These rights and responsibilities are outlined by Regulation E of the Federal Reserve.

Technology has changed the way the consumer participates in the payments system and therefore some of the protections under previous legislation. EFTA was passed by Congress in anticipation of some of the impacts of EFT on the consumer. Although the law provides protection to the consumer, there are some instruments where the level of protection is unclear. In addition, many consumers perceive technology-based instruments to be the same as their paper-based counterparts, not realizing that rights and liabilities may differ, depending on the use of technology.

It is now possible for an individual who possesses what appears to be a traditional bank credit card to be protected from misuse of the card under a variety of legislation, or not at all, depending on the type of transaction. For example, if a bank issues an individual a debit card that is associated with an account with a line of credit and is also compatible with an ATM, the individual can perform a number of different types of transactions with the same card. If fraudulent use is made of the card by accessing the line of credit, he has recourse under consumer credit legislation; if the fraud involves EFT, as in the case of an ATM cash withdrawal or electronic POS terminals, his liability is limited under EFTA (although not to the extent as under the Consumer Credit Protection Act).

If, however, the fraudulent use of the card directly debits the person's bank account in a paper-based transaction, it is not clear whether the consumer has recourse under current legislation. This is an example where the same card represents three different instruments, which, in the case of fraud, would require different actions by the consumer. In recognition of this, the Federal Reserve Board has proposed to update Regulation E to include certain debit card transactions.

In terms of financial management, many consumers are likely to be aware of the difference between accessing a line of credit and directly debiting their bank accounts with the card, but it is doubtful whether they would recognize a distinction between a debit processed electronically and one processed in the paper system. It is also reasonable to assume that the consumer perceives no difference between all of the transactions in a regulatory sense. Regardless of consumer perception, debit card transactions in the paper-based system currently offer little protection to the consumer.

Transition From Paper-Based to Technology-Based Systems

> It is conventional to regard households rather as passive participants in the move towards EFT, slowing down progress by their reluctance to accept change. To a great extent this is a true picture, the proportion of sophisticated households pressing for faster progress being very small, but it is not the whole story. The very passivity of households means that changes will be accepted if they provide the essential requirements of individual persons, and in most industrial countries significant proportions of the population are already accustomed to handling plastic cards; they are not likely to worry greatly whether the plastic card triggers off a paper-based or an electronic payment, and it is clear that the publicity approach adopted by banks is an important element in acceptance by households.[20]

Technology does not in itself meet any consumer needs, and since most consumers are reluctant to accept new services when the old still meet their needs, technology does not insure the acceptance of new services by the consumer. However, the use of computers, both at home and in education, may encourage consumer use of technology-based services by familiarizing the consumer with technology and by creating a new class of consumer for whom the technology is a given.

One aspect of financial systems that may impede the growth of technology-based services is the float. In recent years the float has become increasingly shorter. Technology-based payment systems could eventually make the float nonexistent; all transactions could be settled immediately. Currently, the consumer has the advantage of float in the checking system. Use of the paper-based debit card has managed to undercut the "free ride" associated with credit cards and may eventually wipe out all float in the checking system.

Nearly all technology-based services are still discretionary—i.e., the consumer can make a decision whether or not to use them since there are paper-based alternatives to meet his basic financial needs. At some point in the future, however, this may no longer be true.

Security of Consumer Assets in a Technology-Based System

Since technology-based systems provide new points of entry into the system, there is potential for new kinds of fraud. The question of computer security and crime touches every aspect of the financial service industry. Discussion here, however, will be limited to those ways in which the technology is applied to consumer services and to the security issues that arise directly as a result of those applications.

Recent concern about consumer financial services has revolved around the relative security of access devices and the need to identify positively the EFT user. As the systems become more complex and as a greater percentage of the population begins to use home banking and POS systems, problems with the current means of identification will become more obvious.

With the ATM, the consumer's loss is limited by the amount of cash he is allowed to withdraw from the system. Although his liability is limited under EFTA for unauthorized transactions, when more sophisticated financial transactions are involved, the consumer's financial loss could be greater if not noted and reported within the period of time required by law. This could have an impact on the willingness of the consumer to use these systems and therefore on the rate of acceptance of them. In that event, the market could force the providers of services to secure the systems better.

The current means of identifying an authorized user at an ATM is a personal identification number (PIN). The use of a PIN has a number of flaws. For example, if the number is long, it could be easily forgotten; if it is short or a variation on a number with which the consumer is familiar, such as an address or telephone number, the "code" could easily be broken. With a proliferation of electronic debit cards, there has been an equal proliferation in PINs, making them all the more difficult to remember. Although consolidation of services in a single card would help alleviate this problem, there is little evidence that this will happen in the near future. PINs are also insecure in that they do not positively identify the cardholder as an authorized user; they can be transferred to other individuals. Some consumers will keep the PIN together with the card, a combination as negotiable as cash.

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[20] J. R. S. Revell, *Banking and Electronic Funds Transfer* (Paris: Organization for Economic Cooperation and Development, 1983), p. 101.

Technologists are currently working on solutions to the identification problem. Examples of alternatives to the PIN are "warm-body" identifiers; included in this classification are thumbprints, voice prints, and signature dynamics. Thumbprint recognition is less likely to be acceptable to the public, since it would require that every individual who uses EFT has his thumbprint on record. Although there are certain problems with development, most industry analysts see signature recognition, or the more complex technology of signature dynamics, as the most acceptable alternative to both the industry and the consumer, since it is the predominant means of identification used in financial services today. It will be some time, however, before the technology will be applied to financial services.

The use of ATMs presents personal security problems, beyond those purely associated with financial security. Individuals using the machines may be particularly vulnerable to robbery. During normal business hours a traditional "brick and mortar" structure provides the individual security during and after a transaction. An ATM located away from this structure could place the user in a vulnerable position. Even those ATMs located at bank branches can be insecure when used outside of banking hours. It is difficult to assess the seriousness of the problem, because most institutions are unwilling to divulge information on security for fear of discouraging use of the systems.

In addition, it would appear that the consumer is more vulnerable in technology-based systems. For example, in a bank robbery, the bank absorbs the loss; in the case of electronic robbery, specific accounts are debited. There is no electronic "till." The responsibility shifts to the consumer to note and report the crime.

Some perceive technology as a solution to problems that can plague the consumer of financial services. Credit card fraud, which is frequently cited as a growing problem in the industry, can be made more difficult by the use of sophisticated technologies. In many ways fraud is a provider problem; the consumer is protected under legislation from illicit use of his credit cards, and if sufficiently informed he can prevent all but a minimal financial loss from the fraudulent use of his card. Both VISA and MasterCard have introduced or are planning the introduction of cards that are expensive and difficult to counterfeit. It is difficult to say whether these cards will in the long run reduce fraud, since it will be some time before the effect of their introduction and use will be felt; the cost to produce the cards is much greater. However, if these cards reduce fraud, for which the consumer implicitly pays, it may ultimately lower the financial burden for the consumer.

Privacy

Any discussion of the issue of privacy and the consumer begins with the difficulty of defining privacy and therefore what it means for the consumer to be vulnerable in this area. In its basic definition, privacy is the freedom from unauthorized intrusion, the authority in this case coming from the individual. However, in the course of everyday life the consumer has given up some of these rights, or has "authorized" certain instrusions into his life. The distinction between what is explicitly authorized and what is not is unclear. Privacy is considered one of the primary concerns of the individual when choosing financial services.

Much controversy surrounds the issue of EFT and privacy; that is, whether the systems that constitute EFT make the individual more vulnerable to violations of privacy. In the final report of the National Commission on Electronic Fund Transfers, privacy was defined as "... the individual's expectation of control over what information about himself is communicated to or used by others." Further, "the object of the consumer's concern regarding privacy under EFT is the potential use of his financial transaction information to develop a personal profile." [21] This use could be as seemingly harmless as an individual receiving product solicitations, based on his income and profession, from the financial institution where he does business, to the capability of the system to provide sensitive information about the individual's behavior patterns.

As mentioned earlier, cash is a private method of payment. Checks, although less private, are a paper-based mechanism, and are perhaps easily tracked on a case-by-case basis. Although electronic payments secure the consumer from some types of prying, they may in fact make him more vulnerable on a large scale. EFT transactions are recorded and stored automatically and provide the potential for invasion of privacy.

Some studies show that privacy currently ranks low as a concern for the individual—it has been dismissed by certain experts as a subject only of academic concern. A 1982 BMA study shows that users of home computers strongly disagree with the statement that computers would violate privacy. Even nonusers did not list privacy as a major concern; they were either "not sure," or were in disagreement. Fewer than 20 percent of total nonusers agreed with the statement.

Even when the issue is more clearly defined there is only slightly more resistance to electronic systems because of privacy issues. For example, in the same BMA survey, 20 percent of users and 25 percent of nonusers said that the possibility that someone else would have access to their account information could create problems in a telephone bill paying system. This represents a higher percentage of users, but about the same percentage of nonusers who agree that privacy was an issue for concern in the use of home computers. The same is true for data on automatic deposit services. The lowest response to the question was in reference to the ATM; there is some evidence that transactions performed by ATMs are considered more private than transactions using a human teller. It appears that consumers for the most part do not perceive privacy as a major issue for concern in their choice of EFT systems; other, more market-oriented questions seem to determine consumers' use of these systems.

The newer technology-based services, in particular home banking, provide new opportunities for invasion of privacy. As yet there are no uniform privacy standards for information gathering. The Videotex Industry Association (VIA), the trade association for the U.S. videotex industry, has recommended voluntary guidelines for maintaining the privacy of videotex subscribers. These guidelines suggest ways in which providers of videotex services can protect the data that they accumulate and therefore inspire consumer confidence. Additional recommendations cover collection of information, government access, security, subscriber access, correction of errors, applications to third parties, future revisions, and retention of information.[22]

These guidelines are not binding to the industry, and certain VIA members plan to adopt their own company privacy code based on VIA's guidelines. Several financial service institutions, in particular bank card providers, have corporate guidelines to protect the privacy of their account holders.

Consumer Rights to Financial Services

Technology may increase access to the system for a number of people and expand choice for still others; however, because of price there may be a tendency in technological systems for certain groups to be either excluded or perhaps more heavily taxed than others. For example, although bank cards will be a primary vehicle for introducing some of the new systems to the consumer, there are many consumers who are ineligible to use them. As a result, nonusers may in effect be blocked from certain types of financial services.

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[21] National Commission on Electronic Fund Transfers, *EFT in the United States: Policy Recommendations and the Public Interest*, Oct. 28, 1977, Washington, D.C., p. 19.

[22] Videotex Industry Association, "Model Privacy Guidelines for Videotex Systems," June 1983.

Technology makes it possible to serve lower balance consumers through ATMs, and therefore lowers the cost of servicing these accounts. Certain needs of these consumers may not be met by the technology; however, more personalized services may be unavailable to them. This tendency plus fee-for-service pricing may transfer the costs to the consumer in a way that is inequitable. Even if the cost of home information services technology drops and communications costs rise, certain lower middle-income segments of the population may still be barred from participating in the system. That segment of the population that cannot maintain a minimum balance in a traditional account may be served by other nonregulated institutions (e.g., retailers, and perhaps local grocery or liquor stores) or they may be forced from the system completely. This brings into question the safety and soundness of these nonbank depositories and whether they should be regulated.

The trend of a universal electronic payments system may put pressure on the financial service system to accept people who otherwise would not have accounts at financial service institutions. It may necessitate Federal guarantees to banks that service low-income or low-balance consumers. This is particularly important when one considers the policy of the U.S. Treasury to encourage direct deposit, and the possible requirement that some consumers must participate in the system via government transfer payments processed electronically.

In the 1970's in the ECOA, Congress recognized that in order to be a productive member of American society, the consumer must have fair access to credit. Although consumer use of technology-based systems is still minimal, there is some evidence that access to technological systems or the financial system in general will eventually be a necessity. In the future, Congress may have to consider to what extent this access may also be a right.

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Chapter 8

Findings

The financial service industry is experiencing a period of tremendous change. Economic factors, specifically those that drove interest rates to record levels during the last decade, have caused the users of financial services to seek new services. In turn, innovative providers of services have responded to consumers' new financial needs and sophistication.

At the same time, a number of technologies that have been just over the horizon for some time have begun to mature. For example, computers, still in infancy during the 1950's, are now used to deliver services directly to the consumer without human intervention, and the tendency to use systems based on information and telecommunication technologies for delivering financial services is increasing. The general public's level of familiarity with computers has increased, providing a fertile climate wherein significant numbers of users now accept the new services. Falling prices for electronic equipment and the increasing pervasiveness of such equipment throughout the economy have further reinforced this trend.

In many cases, the basic services offered by the financial service industry are not changing in any fundamental way. A deposit taken through an automated teller machine (ATM) is not substantively different from one taken by a human teller. However, the availability of technologies that can quickly process and move vast amounts of data has made it possible for financial service providers to offer products beyond those that would have been possible otherwise. For example, the money market mutual fund could have been offered a century ago if there had been some means of processing the transactions necessary to make such a fund work economically.

Further, there is a definite trend in the economy away from the older "smoke-stack" industries to the production of information and the development of those technologies that make possible and facilitate this transition. A considerable number of entrepreneurs see potentially profitable opportunities for providing information services directly to consumers, but, in general, they have yet to find the package of services that will be successful in the marketplace. Virtually all agree. however, that financial services will be an important element of that package. Thus, the forces that are changing the basic character of the American economy are directly affecting the structure and character of the financial service industry.

The foregoing changes have affected the relationships between and among the various participants in the marketplace. Some perceive themselves to be relatively better off, while others feel they have been put at a disadvantage. Some argue in favor of policies that direct the evolution of the industry along predetermined paths, while others, somewhat fearful of foreclosing opportunities from which there could be widespread benefit in the future, argue that policy should remain neutral in order to permit the market to work it's will in shaping the industry.

The present rate of change is a transitory phenomenon, and the structure and character of the financial service industry will stabilize during the coming decade. However, unless some explicit action is taken to preserve the present structure of the financial service industry, it will look much different at the turn of the century than it does now. And yet, there is no assurance that policy parameters can be adjusted with a high degree of confidence to bring about a specific, desired industry structure. Available and emerging technologies have created many opportunities for innovative people to engineer their way around regulatory barriers to achieve their goals and objectives.

In light of the accelerating rate of change in the financial service industry and in the economy in general, it is not reasonable to make any firm predictions about the structure and character of the financial service industry. However, a number of conclusions that bound the range of possibilities have been developed, and these are presented in this chapter.

Conclusion 1: Applications of Technology and the Changed Nature of Financial Services

The applications of advanced information and telecommunication technologies in systems for delivering financial services change the way those services are created, delivered, priced, received, accepted, and used.

Years ago, depository institutions credited interest to savings accounts only quarterly, or even less frequently. Today, most pay interest from the date of deposit to the date of withdrawal and compound interest at intervals so short that they are nearly continuous. This change was encouraged by deposit-rate ceilings and made possible because the institutions installed computers that enabled them to handle the computational workload required to provide the enhanced service.

Rapid advances in telecommunication and information processing technologies have been followed by applications to the delivery of financial services. In some cases, the changes accompanying the introduction of technology have been imperceptible to customers. For example, one month a statement may be prepared on an accounting machine and the next, on a computer. In others, the changes have required users to change the way they use financial services and the way they interact with service providers and systems for delivering services (e.g., ATMs rather than human tellers). In addition, as users became more competent with the technology, they forced providers of financial services to change the way in which they interacted with their customers. J. C. Penney, for example, agreed to accept the VISA credit card only after VISA agreed to permit a direct connection to the network by the retailer.

In some ways, the rate of change in the financial service industry is accelerating in response to the assimilation of rapidly advancing technologies. On the other hand, the reluctance of a significant number of users to adapt to the changes is limiting the rate of change in the industry. Only a little over 30 percent of the recipients of Social Security payments have agreed to accept payment by direct deposit, thus limiting the ability of the Department of the Treasury to realize the full benefits of applying the available technologies. Public reaction to a requirement by one bank that only customers who held deposit balances of $5,000 or more could receive service by a human teller caused cancellation of the program.

Sometimes technology can indirectly affect the availability of financial services. Technology that facilitated the development of the bank credit card is particularly important in the programs of card issuers to limit fraud and losses to bad debt. One of the key features of the cards is that the merchant accepting them is guaranteed the funds as long as the rules for acceptance set down by the card issuer are followed. As a result, many merchants are reluctant to accept a paper check at the point of sale, preferring instead to avoid the risk of loss the check entails. Thus, indirectly, applications of technology have reduced the ability of consumers to pay for purchases by check. (Ironically, the same technologies that have made the credit card attractive to the merchant are being applied to rejuvenate the check. Although they have not fulfilled the expectations of a few years ago, check guarantee and authorization services provide the same kind of protection from risk for the merchant that is offered with the credit card.)

Technologies have also lessened the significance of distance and time of day as factors in the delivery of financial services. Telecommunication makes immediate interaction between service providers and their customers possible, regardless of the location of either. The terminal device used by either can be one that can be programed to operate unattended, at hours that are suitable to the schedules of both users and providers and in ways that make minimization of communication costs possible. International networks of ATMs now being established will allow the consumer to access depository accounts in other countries and will negate existing restrictions on the taking of deposits across State lines. Wire transfers, for example, can be used to deposit funds to an account without regard to the bank's location.

Furthermore, technologies have also changed the nature of the depository account. While only chartered depository institutions can take deposits, others have been able to take advantage of the ability of the technologies to process and transfer large amounts of information quickly to offer various investment products that have liquidity approaching that of a deposit. In addition, the importance of banks and other institutions as depositories for funds is diminishing. The application of technology has made it possible for customers to use depository accounts only to collect funds for a short period, disburse them rapidly as needed, and place any remaining funds in short-term investments. In this situation, the depository institution must receive the bulk of its income from fees charged for service because the availability of funds on deposit that can be invested for its own account is limited. Also, a number of factors have reduced the spread between the fees paid for deposits and those earned when the funds are lent out. One way of replacing this income, selling services for fee, is the course that financial institutions are following.

Major capital investments are necessary to implement new systems for delivering financial services. However, once the systems have become operational, the institutions that developed them can market them to other financial service providers. Purchasers of the packages are then able to offer significantly enhanced services without expending large amounts of capital.

Historically, only depository institutions have processed payments transactions and have had exclusive access to the payments systems. Now, the development of information technology has created the opportunity for others to enter this market. A substantial industry of wholesale service providers not usually seen as financial service providers now supports retail financial institutions. In fact, the existence of this industry has made it possible for many smaller retailers to exist. Yet many wholesale nonbank processors are denied direct access to the payments mechanism, which, some of them argue, puts them at a competitive disadvantage as providers of wholesale services and limits their ability to serve the needs of clients who are not part of the financial service industry. These wholesalers see financial institutions competing with them as providers of information processing services while retaining the advantages that come with exclusive access to the payments mechanism.

On the other hand, financial institutions attempt to provide the full package of information processing services needed to support all of the activities of their clients that are related to financial operations and payments. As the dependence on technology for providing financial services continues to increase in the future, this conflict between competing classes of institutions will become more intense. Depository institutions, pressured by decreasing earnings from deposits, will seek to expand their base of customers that pays fees for services at the same time that their competitors seek to provide alternative sources of financial services to those same markets.

The financial service industry is dependent on reliable and effective telecommunication facilities for its existence. If financial data, both payments and collateral information, cannot be moved rapidly and reliably worldwide, the financial service industry could not function as it presently does. Further, systems for delivering financial services have been designed to take into account the present configuration and cost structure of available telecommunication facilities. Any significant departure from historical patterns could have a direct and major impact on the costs of delivering financial services, the structure of the industry, and the distribution of costs among the various participants.

For example, home banking systems have generally been designed so that the user need make only a minimal investment in terminal equipment and can rely on the computer operated by the service provider for the processing required. Implicitly, this type of design assumes that low-cost telecommunication facilities are available and that the cost to the user of a lengthy, interactive session with a host computer will be minimal. On the other hand, if local telecommunication costs rise significantly, such systems may have to be redesigned to minimize the connection time between the user and the provider's computer; this could result in excessive cost to the user of a terminal. Similarly, the large amounts of capital used to establish telecommunication networks operated by providers of financial services under present pricing structures could effectively be lost if changes in telecommunication result in prohibitive costs of operation.

Float, its cost, and who benefits from it have long been at issue. The various financial service participants have developed strategies to take advantage of float that range from consumers issuing checks 2 or 3 days before they deposit funds to corporate treasurers disbursing funds from remote locations. The technologies, on the one hand, provide the opportunity essentially to eliminate collection float from the system while, on the other hand, offering the payer the opportunity to control with absolute certainty the time at which a disbursing account is debited. Businesses, then, could revise trade discounts to reflect the new realities by allowing, for example, discount if good funds were available after 12 or 13 days instead of allowing it if the check is postmarked on or before the 10th day. Similarly, consumers who know that funds will be available on a specific day could schedule their payments accordingly, rather than playing games with the system, as they do now.

Finally, technologies make it possible for individuals, businesses, and government to keep minimal idle balances. Because all parties can know exactly when good funds are available and when disbursements must be made, they can move all funds not needed for day-to-day transactions into investment accounts that pay market rates of interest. Then, funds can be moved to transaction accounts that either pay no interest or pay below-market interest rates for minimal periods to meet requirements for disbursements and/or to receive funds from others. The net effect of this tendency will be a constantly increasing downward pressure on the balances of transaction accounts held by depository institutions and others.

Conclusion 2: Restructuring the Financial Service Industry

Some patterns in the ongoing restructuring of the financial service industry are discernible: the present fluidity and rapid change will continue for some time, but many uncertainties cannot now be resolved and many alternative possibilities exist.

The structure of the financial service industry was, at one time, clearly defined. Most individuals and businesses conducted their financial affairs primarily with depository institutions such as banks, savings and loan associations, and credit unions. The financial service industry is now changing: new products are being developed and offered and the roles of traditional institutions are shifting. The simplicity of the industry has all but disappeared.

Today the financial service industry consists of a variety of organizations, ranging from traditional depository institutions and related financial organizations that have expanded services, such as securities firms, to such nontraditional financial service providers as supermarkets and retail department stores. A variety of organizations offer investment opportunities in an increasingly competitive market. Promotion of products and target marketing has become increasingly important for financial service providers who are looking for new ways to reach users and retain and gain market share; e.g., television and direct mail advertising has become common.

Depository institutions have begun offering brokerage services (INVEST) and insurance (mutual savings bank life insurance in Massachusetts and New York). To compete with other financial service providers they place greater emphasis on serving the customer on a 24-hour basis as well as on making convenience a priority (ATM deployment and home banking).

Depository institutions are governed by strong regulations, many of which were written at a time when the competitive character of the financial service industry was very different from what it is today. For example, regulations which set ceilings on deposit interest rates at federally insured commercial banks, savings and loan associations, and mutual savings banks restricted the ability of depository institutions to compete with money market funds, a product development that was not anticipated at the time the regulations were framed. Some regulations, meant to be protective, must be adapted to the changes the industry faces. Some new regulations have been necessary. For example, the Garn-St Germain Depository Institutions Act of 1982 amended numerous Federal banking laws and created five new ones, allowing depository institutions to offer the money market demand account and the Super NOW account.

Major influences for the recent changes in the industry have been high interest and inflation rates and, therefore, the high opportunity cost of standard consumer savings instruments, resulting in a phenomenon known as "disintermediation." Funds flowed out of the depository institutions into nontraditional instruments and institutions as many individuals shifted their assets in order to obtain the high interest rates. Many of these new instruments were created by organizations outside of the regulated environment of depository institutions. One example is the money market mutual fund created by the securities industry, which works like a combination savings and checking account. Funds invested in money market mutual funds earn a market rate of return, and the funds are as liquid, for all practical purposes, as a checking account. The customer accesses the account with a share draft, which works in much the same way as a check and is considered to be equivalent by most users. The only practical difference is that, in many cases, there is a minimum amount for which the draft must be written, usually $500.

In the new competitive climate, nontraditional financial service institutions quickly realized the tremendous potential in providing financial services. They also realized the ease with which they could enter this industry. For example, J. C. Penney, a major national retailer, operates a highly sophisticated online communications system that supports over 35,000 online terminals. J. C. Penney expanded the usage of its communication system and began processing credit card transactions for oil companies. Outside of its role in financial services as an extender of credit to retail customers, J. C. Penney has become a financial service provider of a different sort by performing functions normally associated with a bank.

Supermarkets have become focal points for ATM deployment and point-of-sale programs. Safeway, an Oakland, Calif., supermarket chain, has announced plans to develop and market a national ATM network. Some supermarkets intend to replace banks and others as operators of switches for financial transaction networks and are highly competitive in this area. They are also taking a major role in the decisionmaking surrounding these activities. Petroleum companies, with their vast chains of retail gas stations, are following the lead of the dry goods and grocery chains.

Unlike most depository institutions, many securities firms have a national presence. They can conduct business nationally with few restrictions. In addition to brokerage and investment banking services, many such firms now offer a wide variety of consumer financial products, such as money market funds, with debit card and ATM access, as well as asset management accounts (a combination of a depository account and a margin account). These new product offerings have gained a significant market. For example, the Merrill Lynch Cash Management Account, which works as both a savings and an investment instrument, serves over 1 million people. Customers can access their accounts via telecommunication networks operated by the securities firm from any office, regardless of location.

Although insurance companies are licensed separately by each State, many serve a national market through networks of company-operated offices and independent agents. Many insurance companies are augmenting traditional product lines with new offerings that directly compete with those offered by other providers of investment services.

The concept of the "boutique" bank, which serves a highly specialized market, is becoming more widely accepted as the industry reorganizes. National Enterprise Bank, which opened in Washington, D.C., in August of 1983, is one such bank. Enterprise is aimed at professionals—doctors, lawyers, dentists, accountants, and consultants. Its intent is to serve the affluent professional in a specialized fashion far different from that of a commercial bank. Palmer National Bank, in Washington, D.C., is another newly opened boutique bank. It specializes in financing for small, high-technology firms. Many of Palmer National Bank's clients have financial service requirements that are often too small to be of interest to big banks with international experience.

By joining a local, regional, or national network, these small institutions can immediately deliver services to a large number of locations in direct competition with major institutions. Despite speculation, there is little doubt that these organizations will survive. Unlike the regional giants, specialty companies and small-niche companies that cater to a narrow population segment have positioned themselves to do one thing superbly. It is possible that the industry may begin to be shaped like a dumbbell, with a large number of small banks serving local needs at one end, a relatively small number of large banks providing service nationwide at the other and, in the middle, virtually no midsize banks serving regional markets.

In sharp contrast to the specialty provider is the financial supermarket. Offered as a one-stop financial center offering banking, insurance, brokerage, and investment opportunities, the financial supermarket has been a successful concept for both Sears Financial Network and Merrill Lynch, among others. Both of these organizations offer brokerage services in stocks, bonds, options and futures contracts, insurance, savings instruments, mortgages, consumer loans, retirement savings plans, and even credit cards to their customers. However, the degree to which the service packages of each firm are truly integrated varies significantly. Financial supermarkets seem to have found a niche in the ever-growing consumer financial service market. This concept is attractive because of the low cost of entering the business as well as high potential profits. The financial supermarket has not yet matured, nor has its long-term viability been demonstrated.

Legal barriers still hinder the entry of some businesses into the financial service market and the cross-entry of some providers into other areas of financial services. In most States, and at the Federal level. banks are barred from insurance (except for credit policies), from investment banking, and, to a decreasing degree, from interstate branching. Present regulatory barriers prevent brokerage houses from operating as a financial supermarket in the true sense of the word. While brokerage houses perhaps come closest to achieving true integration, they cannot accept deposits or have direct access to the payment mechanism, and therefore cannot truly offer banking services. Although no one is sure what combinations of businesses will prove to be the winning ones, to the extent that an organization can achieve a greater national recognition in the market, it will enjoy an advantage over its competitors.

For many types of organizations to build a financial supermarket, a number of mergers and acquisitions may be necessary. Several nonbank providers have acquired banks to have access to the payments mechanism and Federal deposit insurance. These financial conglomerates have come along much faster than expected because of the profound changes in insurance, banking, and securities brought about by the interplay of high interest rates, technology, and regulation.

Aside from economic conditions, which many claim are a driving factor behind the changing structure of the financial service industry, is the major role technology has played. As financial service companies continue to rely heavily on new technologies and automated processes to provide services, new services that could not be offered without the support of such technologies emerge. Some new technologies allow a firm to produce two different types of financial services together less expensively than for two individual firms to produce them separately. Online communication systems enable instantaneous debit/credit of financial accounts, and immediate execution of orders to buy and sell securities. Brokerage sales across the country are facilitated by immediate real-time access to financial information.

The significant changes in the structure of the financial industry bring to light several important points. Technology has been one key factor enabling nontraditional financial service providers to enter the market. The technologies necessary to drive the systems that support financial services are already in the hands of new entrants because such technologies can also be applied to support many different industries. As a result, many potential entrants are able to offer financial services using established computer and communication systems. Some firms have entered the market for retail financial services, some have become wholesale providers, and others have entered both markets.

Industry restructuring has brought about significant potential for industry consolidation as the functions that support the industry begin to overlap. While depository institutions are technically the only organizations allowed to accept deposits, nondepository organizations have developed products that are near-deposits and thus compete with products of depository institutions. Money market mutual funds, in essence, accept deposits and are viewed by those who own them as savings instruments. Insurance contracts, particularly those that allow the owner to control the allocation of funds among alternative investment opportunities and that accumulate cash value, can also be viewed as close substitutes for deposit instruments.

The traditional categories of depository and nondepository institutions are no longer clearly delineated or functionally separate. These changes create more product choice for the consumer, but also increase the amount of consumer confusion in choosing and using services. Since so many of the products and services from the various financial service organizations are similar, many consumers are unaware of the significant differences.

Regulation, once a guiding force with respect to how the industry operated, no longer has as commanding an influence. Interstate branching and deposit-taking is now a reality,* influenced considerably by the deployment of ATMs. Many State banking laws now provide for reciprocal interstate branching and may result in the emergence of major regional banks that maintain offices in several States. Massachusetts, for example, passed an act, entitled "An Act Relative to Branch Offices and Acquisitions of Financial Institutions," that establishes new authority for mergers, branching, electronic branching, and mortgage lending by Massachusetts financial institutions. The act is limited in its operation to activities involving five New England States (Connecticut, Rhode Island, Maine, New Hampshire, and Massachusetts).

The changes in the structure of the financial service industry now occur at such a rapid pace that it is no longer a question of when certain changes will occur, but of how to implement the changes and how they will be accepted. It is difficult to predict the ultimate consequences of the restructuring; however, there are indications that the financial service industry is changing from a traditional to a self-service industry. The overwhelming use of ATMs and the promise of emerging remote banking/remote information systems provide evidence for this claim. Many of the consumer-oriented systems that deliver services to the home are being developed by a variety of joint ventures that offer a myriad of services, not only in banking but also in entertainment, education, and other financially related services. Although the traditional depository institution will remain, its role may well change. There will continue to be new innovations and players in the industry, and a market willing to test them.

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*Several States have reciprocity agreements for interstate deposit-taking by ATM—e.g., Washington, D.C., and Maryland.

Conclusion 3: Interaction Between Technology and the Legal Regulatory Structure Governing Banking

Some of the existing laws and regulations pertaining to the financial service industry are ineffective or inapplicable to current and potential changes in financial service institutions and products. Both Federal and State legislative bodies have reacted to changes in the market and have either ratified events that have taken place or taken advantage of and encouraged perceived trends.

A significant portion of the regulatory framework governing the financial service industry, written in the 1930's (Banking Acts of 1933-35), 1940's, and 1950's (McFadden/Douglas, Glass/Steagall) is still in force today. A large number of the restrictions imposed on the banking system were a result of the Great Depression of the early 1930's. The restrictions were an attempt to meet the demands for financial services provided by firms that were both sound and secure and in an environment conditioned by a significant decline in the money supply which led to rapid deflation, a large number of financial institution failures, and a very high level of unemployment. Today, the environment is much different, and the needs of both consumers and businesses have changed.

The Banking Acts of 1933 and 1935 were designed to promote safety and soundness in banking. While safety and soundness are still the main concern, the environment and the consumer/business needs have changed significantly. Today, only a few of those regulations adequately meet the needs for which they were designed, and some may actually be detrimental to the industry they regulate.

When the financial service industry first became regulated, the regulations were written according to functions performed by the specific institutions, and the legislation became tied to the institution it regulated instead of the function. The institutional lines are now fuzzy.

Existing Federal laws and regulations have made it increasingly difficult for banks to compete against new entrants into the markets where they have traditionally had an almost exclusive franchise. Several points must be considered, however. Banking is looked upon as a special business that is key to the economy. Consistent with this view, particular steps were taken to insulate it from other lines of commerce and to limit the risks that banks were permitted to take. The introduction of deposit insurance helped limit the exposure of depositories to risk. On the other hand, existing regulations are designed to prevent banks from exerting undue influence over other lines of commerce.

Presently, the roles of the various Federal agencies with respect to regulating depository institutions are complex. National banks are chartered by the Comptroller of the Currency. Federal savings and loan associations and Federal savings banks are chartered and regulated by the Federal Home Loan Bank Board. Federal credit unions are regulated and insured by the National Credit Union Administration. Bank holding companies are regulated by the Federal Reserve Board.

The United States has maintained a dual system (Federal/State) for the regulation and supervision of banking. This dual banking system has played a useful and constructive role in encouraging innovation in the financial regulatory environment and in helping accommodate local differences in the needs of banking organizations and their customers. The system worked well because, for the most part, the goals of regulation were commonly shared. However, this appears to be breaking down. States are beginning to allow incredible expansion of power for banks and thrift institutions that go far beyond standards allowed by Federal law and yet still benefit from Federal protection. Banks have demonstrated that they will establish offices in States that offer a particularly favorable regulatory climate.

One of the concerns depository institutions face is that a growing number of differently regulated financial service organizations are able to offer a broader range of financial services than the depository itself can offer. For example, Merrill Lynch can offer securities services, real estate services, and a package of additional financial instruments, such as the money market fund (cash management accounts which serve as high interest-earning savings instruments), and, to a limited extent, transaction accounts. While it is possible for nontraditional providers to compete head-to-head with banks by offering new substitutes for banking products, depository institutions do not have the same leverage.

Many of the nontraditional financial service providers are improving their positions vis-à-vis banks by establishing or acquiring commercial banks or thrift organizations (e.g., Dreyfus Corp./Lincoln State Bank of East Orange, N.J.). Travelers Insurance Co. has requested regulatory approval to offer FDIC-insured* instruments to its customers through a trust subsidiary. Depository institutions, except in some States and for some grandfathered institutions, are not allowed to own insurance companies nor are they under any circumstances allowed to provide a full range of investment services, although holding company affiliates may engage in discount brokerage.

Organizations, however, have found ways to circumvent the existing financial service regulatory structure. Technology has certainly been one of the driving factors. The ATM, for example, enables interstate access to individual bank accounts, and in some instances local regulatory authorities and legislation have permitted interstate deposit-taking, as well. (Douglas and McFadden Acts, prohibiting interstate banking and deposit-taking, respectively, are ineffective.) This same technology is being applied by nondepository institutions, such as supermarkets and other retailers (e.g.,

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*Federal Deposit Insurance Corporation.

Publix supermarket, Safeway, Sears) to provide services in direct competition with banks and/or their subsidiaries and service corporations. These organizations are not taking deposits and are not under the same banking regulatory scrutiny as depository institutions, even though the systems being deployed must meet all regulatory requirements with respect to Regulation E and other consumer protection.

Notwithstanding Federal and State laws and regulations, wholesale banking has been done on a national basis for quite a while. Banks are able to solicit business and establish corporate offices on an interstate basis. Advanced communication systems enable real-time access to financial information so that institutions are able to conduct business, including movements of funds, regardless of the locations of their customers.

The "nonbank" bank developed as a result of a loophole to the Bank Holding Company Act. Nonbank banks are commercial banks with either National or State charters that elect to abstain either from accepting demand deposits or from making commercial loans—two activities necessary to fall within the definition of a bank for Bank Holding Company Act purposes. Both the Federal Reserve and the Comptroller of the Currency have taken actions to slow, if not halt, increases in the numbers of nonbank banks and branches.

Congressional actions, responding to market forces and events, have further weakened the provisions of existing legislation. The Garn-St Germain Depository Institutions Act of 1982, for example, permits interstate acquisitions of failing depository institutions if they meet certain criteria. Several savings banks have acquired savings and loan associations in other States. A major money center commercial bank has been permitted to acquire two sizable out-of-State savings and loan associations.

Many new regulations, primarily those affecting electronic funds transfers (EFTs) and written with the expectation that the delivery systems would be fully electronic, do not apply to the present environment. Debit cards at point of sale, for example, are still heavily paper-based and therefore do not fall under the auspices of Regulation E* (protecting consumers using EFT and governing the use of EFT). Actually, the debit card, which in most circumstances is not processed electronically, falls between the "regulatory cracks" and is not under any regulatory authority when used to create a paper document at the point of sale. Many new payments services and deposit-like instruments have sprung up outside the framework of governmentally protected and supervised depository institutions.

The administration has reacted to events in the market that have put banks at a comparative disadvantage by suggesting legislation which it entitled, "The Bank Holding Company Deregulation Act." This act would enable banks to offer new products and services and would address the following four areas: 1) the mix of products and services that would be offered by the commercial banks, 2) the process for gaining regulatory approval for banks entering many of the permitted service areas, 3) the reduction of competitive advantage enjoyed by some (because of disparities in the regulatory structure) by moving to functional as opposed to institutional regulation, and 4) the limitation on cross-subsidization by requiring banks to establish segregated subsidiaries for offering new products. Banks below a certain threshold in size would be treated differently from larger banks in some respects.

Significant changes have occurred to update some of the outdated banking legislation and incorporate new measures for the banking industry. One example is the Garn-St Germain Act. This comprehensive statute contains eight titles that amended numerous Federal banking laws and created five new ones. Another is the Depository Institutions Deregulation and Monetary Control Act of 1980, which, in addition to approving a money market deposit account for banks, provides for the phase-out and ultimate elimination of all Federal limitations on maximum interest rates paid on deposits in financial institutions. Both were passed in response to compelling changes in the marketplace and are designed to correct a lack of competitive parity among competing providers of financial services.

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*The Federal Reserve Board has put out for comment a proposal to cover paper-based transactions under Regulation E. It has also issued a proposed rule to bring paper-based debit cards under Regulation E [Reg. E; Docket No. R-0502].

In some cases, developments in the provision of diversified financial services have been spurred by State laws. The most recent example of this is South Dakota's allowing State banks to own full-line insurance companies. Out-of-State bank holding companies, recognizing market trends and pressures, have shown interest in acquiring or forming South Dakota banks. Currently, many State legislatures have shown interest in liberalizing bank regulations in order to allow forms of interstate banking.

Functional regulation is being considered as an alternative to the present regulatory structure. Such regulation would subject all firms performing the same function to the same regulations imposed by the same regulatory agency. Those who support such a change in regulation feel it will provide a level playing field for all institutions providing the same types of financial services. Additionally, its proponents believe it would provide competitive equity among the depository institutions and nonbank institutions.

Technology development, economic conditions, and other market forces have changed the structure of the industry to such a degree that the boundaries in the existing legal regulatory framework have less and less of an impact. ATM systems permit access to accounts on a national basis; they even permit access to money fund accounts held outside of depository institutions (First Boston/Fidelity). Only the limitations on interstate deposit-taking by banks seem to be holding up, and these are weakening, as evidenced by interstate ATM access reciprocity agreements between States (D.C./Maryland).

A major goal of financial service regulation is to assure the safety and soundness of the financial system. Technology and market forces have introduced significant changes in the industry. Based on available evidence, technology has brought about no apparent reduction in the safety and soundness of the industry. The changes have encouraged Congress to begin reexamining existing legislation, but for the most part Congress has directed its most recent efforts toward catching up with the events that have been occurring in spite of the legal regulatory barriers. In light of the realities of the technology, regulatory consideration and emphasis may be better placed on the impacts of new services on providers and users rather than on the technological developments that ultimately drive them.

Conclusion 4: Financial Options for the Consumer

A primary consequence of the changes in financial services has been the proliferation of options available to users. While many share common characteristics, there are technical differences between them that could catch the user who is unaware of their true implications.

Today, there are more payments and investment options and a greater variety of institutions providing financial services to the consumer than ever before. Choices have expanded in all areas of financial decision-making.

Since the introduction of the bank credit card in the late 1960's, the consumer has benefited from the convenience of a readily acceptable payment mechanism, which provides a means of payment much more negotiable than a check but safer than cash. In the mid-1970's money market mutual funds were introduced, allowing the consumer to invest relatively small amounts of money at substantially higher interest rates than with bank savings and time deposits—without sacrificing liquidity and at apparently minimal risk. By the 1970's, deregulation legislation recognized both the inability of banks to compete explicitly for small-denomination consumer funds under the current interest rate restrictions, as well as the importance to some consumers of insured alternatives to money market mutual funds. Also inherent in the legislation was the recognition of the importance of consumer savings to the health of the economy.

Banks can now offer federally insured money market accounts and interest-bearing accounts that are the functional equivalent of checking accounts (NOW and Super NOW accounts). In addition, penalties for early withdrawal of funds from certificates of deposit have been lessened. Through changes in the regulations affecting Individual Retirement Accounts (IRAs), all consumers can enjoy some tax-postponed income. The systematic dismantling of Regulation Q will eventually completely deregulate interest rates on time and savings deposits.

The individual also has a greater number of options with respect to the financial institutions with which he can do business. The lifting of regulatory restrictions and the development of innovative products inside and outside the banking industry have allowed financial institutions to become full-service providers, differentiating their products and approaching different market segments. Savings associations are allowed to extend consumer credit, which puts them in direct competition with commercial banks and consumer finance corporations and, to a lesser extent, retail organizations. They are also able to offer NOW and Super NOW accounts. Asset management accounts available through securities brokers are accessible through debit and credit cards, which have the same characteristics as the plastic counterparts issued by the banks. Owing to the broad acceptability of the credit cards issued by some companies, primarily VISA and MasterCard, the debit card has become a "paperless check" that is more readily accepted than the traditional paper instrument.

Another option for the consumer of financial services is "one-stop shopping" through the financial supermarket, where all banking,* investment, insurance, and real estate needs can be served in one place. The most visible examples are the Sears Financial Centers, which are under the umbrella of a retailing organization rather than a traditional financial institution. Other national and regional retailers as well as bankers and brokers are considering the same concept. Also, niche marketing—the offering of services tailored to the specific needs of small groups—is available through financial service boutiques. The upscale consumer and specific occupational groups (e.g., farmers) benefit.

Technology provides the competitive edge, making a particular product possible or allowing an institution to take advantage of economic conditions. The most widely available technology-based services are the ATM and automated deposit services (ADS). At-home banking, which began with simple telephone billpayer services, is now being introduced through videotex services and the computer. Point-of-sale (POS) electronic payments systems, which were attempted in the 1970's, are being attempted again in specific trials.

The distinction between those options available to the consumer through technological means and those which seem to be the result of the condition of the economy, product innovation, and legislative changes is not as clear. Many of the options which seem to be the result of economic conditions such as interest rates—e.g., the money market fund—are facilitated to a great extent by the technology. These funds have been automated since their introduction and, considering the size and number of participants in the individual funds, might not have been possible with manual systems.

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*Physical deposit-taking services cannot be offered at all locations.

The Equity of Choice

Choice, in an economic sense, is good, and as such, the assumption underlying the increase in financial management options is that it must benefit the consumer. However, two basic issues must be examined in this context:

1. Do all consumers actually benefit from the current expansion of choice in instruments and institutions?
2. Are there countervailing trends in the financial service industry that may eventually limit options for the consumer or for particular groups of consumers?

There is some evidence that certain classes of consumers are becoming more sophisticated and are demanding new financial services. These consumers are becoming asset managers. However, although most consumers are aware of the choices available to them, many are still confused by the options. Certain segments of society will prosper under a system of greater choice: they will have the necessary information and know-how to make use of the information to their financial advantage. However, other segments may be less fortunate. According to the available trade press, it appears that most financial institutions wish to attract the upscale market, not the lower income and lower balance consumers.

Only a small number of consumers fall within the definition of upscale, yet nearly all consumers require financial services of some sort. Those consumers who are not upscale are likely to experience a decrease in available options. A particularly obvious example of this movement occurred in 1983, when Citibank instituted a policy that barred customers with a balance under $5,000 from dealing with a human teller. Citibank's action met with strong opposition and was eventually reversed. It is difficult to say whether other institutions would have instituted the same or similar policies.

There are more subtle means of reaching the same end, i.e., moving an institution's less profitable customers out of the bank lobby. One way is to price the services of a human teller higher than those of an ATM. Others include having fully automated branches in convenient locations and full-service branches in limited locations, or creating branches where all teller operations take place at the ATM, but personnel on location can assist if there are problems or can carry out functions not possible through an ATM.

In order for the consumer to take advantage of the increased number of alternatives available for financial management, he must understand their function and benefits. Commercial banks and savings institutions may not be equipped to provide consumers with the informed assistance necessary for helping them make increasingly sophisticated decisions. In many cases the bank employee knows as little about the new products and services as the customer he is trying to help. Although the consumer may prefer to deal with a local institution, he will tend to do business with those institutions that not only offer him the best return, but also provide good information. In some cases, that will be the local institution; in others, it will be an institution with a regional or national presence and a more sophisticated marketing approach. This, in turn, may mean a flow of funds out of the community.

Within a single organization, those profiting from the system and those providing information may be the same, creating a potential conflict of interest. In the past, one bank's products were the equivalent of the next bank's, the products offered were straightforward, and competition was based not on the relative merits of each but on the "extras"—i.e., the service offered. Although Truth in Lending Act regulations require that the terms and interest of various credit instruments be clearly stated for purposes of comparison by the consumer, there is no comparable requirement for information about investments.

Marketing to the Consumer

It is no longer clear what the purpose and role of depository institutions is. No longer do such institutions have a unique niche in the marketplace. Under these circumstances, information available to the consumer may sometimes be biased. In the highly charged competitive atmosphere that now prevails in the financial service industry, information may either obscure the real situation or inflate its advantages. A particularly vivid example occurred the first year that IRAs were made available. Advertisements stated that the holder of an IRA could be a millionaire by retirement; however, the ads misled the public by failing to put the notion in economic perspective. Although the consumer should apply the principle of "caveat emptor" to the management of his financial affairs, he has come to perceive banks as noncompetitive, and he conducts his business with banks based on this perception.

In addition to the issue of consumer confusion about available options, which in some ways can be solved by making information available, there is also the question of consumer awareness and education. Consumer research shows that beyond a certain number of variables, the consumer tends to be unable to process information. Often, increasing the amount of information available does not help. Educational differences or the predisposition of the consumer may preclude him from processing the information in a way that would facilitate decisionmaking. Also, the consumer needs more time to make intelligent decisions about the management of his assets, which could force changes in the industry in a number of ways. First, it seems to support the need for a class of personal financial advisors. This trend is likely to continue as the number and complexity of options available to the consumer increases. Unfortunately, there is no certifying process or standard form of education required for these advisors.

Second, it could also eventually affect the number of options offered by the industry. If institutions find that their clientele are confused and unwilling to spend the time to make a decision among a wide variety of choices, the institutions may decrease the number of options available. For example, as of October 1, 1983, banks were allowed to offer certificates of deposit in any denomination for any time period, with fewer withdrawal penalties. They may, however, benefit more from offering only specific products to avoid the confusion attached to infinite choice, in much the same way that a manufacturer will package his products in prespecified amounts. A situation may evolve where the industry is allowed to offer many alternatives but chooses to offer a limited selection based on the preference of a particular market segment or, perhaps, the mass market.

Changes in Pricing Structure

The one trend that is likely to have the most significant effect in the near term on the availability of options to the consumer is the explicit pricing of services.

Competition has forced the industry—in particular, banks—to reduce the "spread," or the differential, between interest earned on assets and paid out on liabilities. In the past, this differential has been the major source of income for financial service providers; however, new sources of income are needed to replace income lost from the reduction of spread. In addition, higher balance, static accounts subsidized active accounts having a low-to-zero balance. As a result of the change in the industry's competitive structure, customers are beginning to be charged for the cost of their services. In a highly competitive, deregulatory atmosphere, cross-subsidization is infeasible because the larger, more profitable account holders will tend to move to those institutions where they can earn the highest interest rate.

Fee-for-service pricing, in most cases, will encourage the consumer to use those services that are the least expensive and may therefore limit his use of particular products and services. However, in certain cases he may not have a choice; for example, most households need checking accounts to manage their accounts. This trend toward explicit pricing seems to affect payment mechanisms the most and therefore will have the greatest impact on those consumers whose financial transactions are heavily payment-oriented.

The Implications of Technology-Based Products

Recent work published by the Federal Reserve Bank of Atlanta projects the rate at which checks will be displaced by other, electronic, methods of payment. Although it still represents a small percentage of total account activity, the steady growth in the deployment and use of ATMs shows some willingness by the consumer to accept technology-based services when they meet specific needs. In the Atlanta analysis, the first stage of check displacement will be in the cash-dispensing function. As long as the infrastructure for the acceptance of electronic payment remains underdeveloped, there will still be a need for paper-based instruments.

Eventually, the entire population may have to participate in the system. This becomes particularly obvious on examination of direct deposit services. Since the U.S. Treasury began encouraging direct deposit of Social Security payments, the penetration of direct deposit has gone from 11 percent of total payments to 33 percent.[1] A Social Security system where 100 percent of all transfer payments are directly deposited would require that all recipients hold accounts with a financial institution or be provided some alternative means of receiving payments electronically.

Currently, 17 percent of all households do not have any relationship with financial intermediaries, either because the consumer chooses not to establish this relationship or because he is an undesirable customer and therefore cannot find a financial institution willing to do business with him. With direct deposit there is pressure on both the individual and the institution to form a relationship. This pressure for institutions is in direct opposition to the competitive pressures they feel from the rest of the industry to rid themselves of unprofitable accounts. Yet, these accounts need not be unprofitable for the bank if it charges appropriately for its service. However, the potential exists of charging an individual, who is in essence forced into the system, a disproportionately high portion of his income.* There is some argument for the subsidization of these accounts, but with the current competitive state of the industry, it is doubtful that a financial institution would be willing to bear those costs. It is not unreasonable to expect the organization that benefits from direct deposit, in this case the U.S. Treasury, to pay these costs.

As direct deposit of government transfer payments becomes more common, other regular income payments may also be paid directly. The issue on a larger scale is not only who pays for the service, but also whether the consumer can be forced to establish a relationship with a financial service intermediary in order to receive his salary.

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[1] *Economic Review*, Federal Reserve Board of Atlanta, August 1983, p. 33.

*Some individuals use services for a variety of normative reasons that may actually be more expensive than would be charged by a financial institution.

Conclusion 5: Security and Integrity of the Financial Service System

The application of advanced information technologies to financial services significantly changes the ways in which, and the extent to which, payment and transaction systems and the users of these systems are vulnerable to system failure, disruption, theft, error, and invasion of user privacy.

Theft of Funds

There are two kinds of threats to financial service systems: 1) those threats inherent in the system, that usually require technical solutions; and 2) those that are perpetrated by individuals who wish to compromise the system and that require more complex solutions, including technology. Some types of crime are possible because of the nature of the paper-based system—e.g., theft of funds sent through the mail, check forgery, and even, to a certain extent, credit card counterfeiting. Technology-based systems can provide solutions; however, by providing new points of entry into the system, they offer potential for new kinds of fraud. Future crimes involving financial transaction and payment systems will primarily involve a computer simply because one is inevitably part of a large-scale, modern-day financial system. The question of computer security touches every aspect of the financial service industry. As the volume of EFT transactions rises, it becomes increasingly important that financial information be secured against unlawful entry and that a system of law be developed under which computer criminals can be prosecuted.

Some perceive technology as a solution to problems that plague the consumer of financial services. Credit card fraud, which is frequently cited as a growing problem in the industry, can be made more difficult by the use of sophisticated technologies. Because of consumer protection legislation, fraud is primarily a provider problem. The consumer is protected from illicit use of his credit cards, and if sufficiently informed, he can prevent all but a minimal financial loss from the fraudulent use of his card. Both VISA and MasterCard have introduced or are planning the introduction of cards that are expensive and difficult to counterfeit. It is difficult to say whether these cards will in the long run reduce fraud, since it will be some time before the effect of their introduction and use will be felt. The cost to produce these cards will be much greater than that for current credit cards. Although the consumer will explicitly or implicitly pay the cost of the card, it may not mean additional financial burden for the consumer in the long run because of the reduced costs of fraud to the card user.

Recent concern in the area of consumer financial services has revolved around the relative security of access devices and the need to identify positively the EFT user. As systems become more complex and a greater percentage of the population begins to use home banking and POS systems, problems with the current means of identification will become more obvious. With ATM the consumer's loss is limited by the amount of cash he is allowed to withdraw from the system. Although his liability for unauthorized transactions is limited, under the Electronic Funds Transfer Act (EFTA), his financial loss could be greater when more sophisticated financial transactions are involved and if those transactions are not reported within the time required by law. This risk could affect the willingness of the consumer to use these systems, and therefore the rate of acceptance of these services. In that event, the market could force the providers of services to secure systems better. It should also be noted that to the extent that the law places responsibility for losses on the provider, it provides additional impetus for providers to secure their financial systems.

Solving the identification problem is even more difficult when placed in the context of the home or workplace. The volume of business at an ATM may allow the use of expensive identification technologies that would not be feasible at a place of business, and certainly not at home. Now the major means of identification in these systems is some form of alphanumeric code or personal identification number (PIN), again not identifiable with a specific individual. Although banking terminals in these locations do not yet dispense cash or a cash equivalent, they certainly provide the opportunity to transfer funds among accounts or to embezzle electronically. These problems will become immense if all personal computers are equipped to access videotex services and electronic financial services and if a larger percentage of the population has access to these terminals.

EFT also generates new kinds of personal security problems—an individual using an ATM to receive cash may be particularly vulnerable to robbery. During normal business hours, a traditional brick and mortar facility provides the individual with security during and after a transaction. An ATM located away from this structure may place the user in a vulnerable position. Even those ATMs located at bank branches can be unsafe when used in nonbanking hours. It is difficult to assess the seriousness of the problem because most institutions are unwilling to divulge information on security issues for fear of discouraging use of the systems. Often, the robberies that occur at ATMs are not reported as such.

The smart card is another new technology claimed to be more secure than existing card technologies. The microchip-implanted card has different levels of security, but the future role of the smart card in the financial service industry remains unclear.

In the commercial environment, the security of payment systems is also an issue of significance. The increasing use of computers to initiate payments automatically raises the need to establish the identity of the computer initiating a financial transaction, just as, in the past, it has been necessary to establish positively that a payment order issued by a human is authentic. Financial systems that perform accounting as well as payment functions must be auditable, lest an unauthorized feature be hidden in the computer programs that constitute them. Care must be taken to limit access to financial information that may be of value to an intruder, even if there is no unauthorized transfer of funds. Finally, superimposed on these requirements are all of the concerns that pertain to individual users of financial services, particulary services that entail remote access to financial service systems.

System Integrity

Systems for delivering financial services can also be compromised by a number of factors that are inherent in the operating environment but are, nonetheless, capable of interrupting service.

In the more traditional systems for delivering financial services, breakdown of system integrity is possible. Records can be lost, along with the audit trails necessary to reconstruct them. Checks and balances built into procedures for processing transactions can be circumvented for expediency or can fail to operate under an unanticipated set of circumstances. However, human involvement in the delivery systems can be instrumental in detecting breakdowns of system integrity when they occur and in implementing the steps to repair or minimize the resulting damage.

On the other hand, financial service delivery systems that rely heavily on advanced technologies are subject to more breakdown factors than those that can damage or destroy simpler technologies. At the same time, they may be built to include protections that cannot be incorporated into simpler systems.

Computer programs, for example, are designed and built to handle a predetermined set of conditions. Any data values not falling into one of the defined categories should be rejected by the program and examples of such occurrences should be included in the tests conducted before a program is put into operation. However, even though computer programs are "validated," exhaustive testing is not physically possible, and there is always the chance that some combination of data can be entered that will produce totally unanticipated results. If the system operator is lucky, the impact will be large enough that it will be noticed immediately and corrective action can be taken. On the other hand, if the error is subtle, its effects, though significant, can go unnoticed for years. In the aggregate, the impacts could be significant, although no one incident may be great enough to instigate steps to correct the error.

Computers rely on magnetic media for storing data, and these media are generally quite reliable. However, since they are not as reliable as paper, particular pains have to be taken to make sure usable copies of the data are available when needed. For example, data on magnetic tape will deteriorate with the passage of time. Also, mechanical failure of a disk drive can cause data to be destroyed. Although sophisticated techniques exist for detecting errors in data recorded on magnetic media, some errors remain undetected. These problems are reasonably well understood, and the techniques for neutralizing them are straightforward and relatively inexpensive if operating management is willing to pay sufficient attention to them and the system design incorporates them.

Similarly, the use of telecommunications in systems for delivering financial services introduces threats to system integrity. Quite simply, if a path between a user and a service provider is not available and verifiable, service cannot be delivered. However, several organizations may be involved in operating the telecommunication facilities that are used, and the problem arises of identifying the ones that are responsible for detecting and correcting any errors that may occur. The divestiture of the Bell System complicates this problem somewhat, but, again, resolution is not beyond the means of competent technical management.

To a very significant degree, a financial service industry operates on the trust and confidence of its customers. Thus, the systems used to deliver financial services must be reliable and verifiable; if not, the basic viability of the industry could come into question. In the future, virtually all providers of financial services will rely heavily on information processing and communication technologies, and it will be virtually impossible for them to revert to manual systems, even for short periods. The application of advanced technologies in systems for delivering financial services introduces new vulnerabilities to system integrity. If these are not taken into account by the designers and operators of these systems, the basic trust that customers place in the financial service industry could be threatened.

Since the class of problems discussed here are purely operational and can be resolved partly with technical solutions and partly with operational procedures and management controls, the key question is whether operating management will devote the resources required for the solution of these problems and whether those who regulate financial institutions will include in their reviews of operations those factors that affect the integrity of systems for delivering financial services dependent on advanced technologies.

Specific Consumer Concerns

Transition From Paper-Based to Technology-Based Systems

Competitive pressures within the financial service industry have fostered the use of technology, augmenting and replacing paper-based systems. On the consumer side of the business, however, this force must be reconciled with the demands of the marketplace, which may be in favor of paper-based systems. As a result, the implementation of technology has not always been as easy in this market as in others. However, as technology-based services and products are introduced and accepted in the marketplace, certain issues arise that are specifically related to the transition from one system to another, and to the reliability of systems.

Although technological systems may have a lower error rate than those using manual processing, those errors may be more difficult to detect and resolve. In contrast, a human error can often be resolved immediately. A significant problem regarding some advanced systems for delivering financial services is that there is no guarantee that a paper record of a transaction is ever created. While Regulation E requires that a customer be issued a receipt at an ATM, remote financial services accessed through a terminal located on customer premises are not covered. Thus, an individual can initiate a transaction without any tangible proof of the fact. Also, while a stop-payment order can be put on a check that is believed to be lost in the mail, it is not clear that an analogous step is possible in cases where a payee denies having received an electronic payment. Guidelines are written that enable a consumer to stop a pay order via the automated clearing house (ACH).

Regulations Relating to Consumer Finance

The consumer facing choices between similar financial instruments is probably unaware of their differing regulatory requirements, or of his protection under the law. It is now possible for an individual who possesses what appears to be a traditional bank credit card to be protected from misuse of the card under a variety of legislation or not at all, depending on the type of transaction.

If a bank issues an individual a debit card that is associated with an account with a line of credit and is also an ATM debit card, the individual can perform a number of different types of transactions with the same card. If his line of credit is accessed fraudulently, the owner has recourse under consumer credit legislation and under Regulation E if the fraud involves EFT. When ATMs or electronic POS terminals are used, his liability is limited under EFTA. If, however, the fraudulent use of the card directly debits his bank account in a paper-based transaction, the consumer has no recourse under current legislation. This is an example where the same card represents three different instruments, each of which, in the case of fraud, would require different actions by the consumer.

The consumer is likely to be aware of the difference between accessing a line of credit and directly debiting his bank account with the card, but it is doubtful whether he would recognize a distinction between a debit that is processed electronically and one that is processed in the paper system. It is also reasonable to assume that the consumer perceives no differences between the transactions in a regulatory sense. Of particular importance, regardless of consumer perception, is the fact that debit card transactions in the paper-based system offer no protection to the consumer.

Privacy

Much controversy surrounds the issue of EFT and privacy—i.e., whether the systems that enable EFT make the individual more vulnerable to violations of privacy. The difficulty of such a discussion is that since privacy has a different meaning to every individual, violation of privacy is not easily defined. In the final report of the National Commission on Electronic Fund Transfers, privacy was defined as "the individual's expectation of control over what information about himself is communicated to or used by others." Further, "the object of the consumer's concern regarding privacy under EFT is the potential use of his financial transaction information to develop a personal profile."[2] This use could be as seemingly harmless as an individual receiving product solicitations, based on his income and profession, from the financial institution where he does business and could range to the capability of the system to provide sensitive information about behavioral patterns of the individual.

Consumers, for the most part, do not appear to perceive privacy as a major concern in their choice of EFT systems; other, more market-oriented, questions seem to determine their use of these systems. A Bank Marketing Association (BMA) survey questionnaire showed a low level of concern about privacy with respect to electronic banking systems. There is additional evidence that transactions performed by ATMs are considered more private than are transactions using a human teller.[3]

The paradox is that other studies show the public to be very concerned with privacy, in particular, the use by government of personal information.[4] However, correlations have yet to be made between this use and individual uses of financial systems. The BMA survey does not question overall the individual's feelings about financial privacy; it only questions the consumer on how secure he perceives specific financial services technologies to be and indicates that users of the technology seem to be less concerned than nonusers with privacy.

However, the issue extends further, to the capability of these systems to track financial activity, which was impossible on a large scale under a paper-based system. Individual be-

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[2] National Commission on Electronic Funds Transfer, final report, October 1977, p. 19.

[3] Bank Marketing Association, *Payment Attitudes Change Evaluation*, (Chicago, Ill.: BMA, 1982), p. 2.18.

[4] Louis Harris & Associates, Inc., and Alan F. Westin, "The Dimensions of Privacy," 1979.

havioral profiles can be compiled in the traditional system using account records, but only with great effort and expense. The same tasks become fairly easy using technology. The competitive atmosphere in the financial service industry today encourages the accumulation of personal information to help minimize the cost of bad accounts and to segment a market of potential customers to approach with new products. The accumulation of this information for marketing purposes allows a ready data base for other purposes. Not all companies have and enforce a strict privacy policy, nor do they guarantee that the information is inaccessible through other means, legal or otherwise.

Privacy is not entirely a domestic issue. Countries outside the United States, notably in Europe, express considerable concern for protecting the privacy of individuals and, in some instance, businesses. Some have limited or prohibited the movement of data relating to their citizens to nations that do not meet their standards for privacy protection. Hence, pressure for privacy legislation may materialize from sources outside the United States, regardless of the level of concern of American citizens with the issue.

Conclusion 6: Integration of Capital Markets

Advanced financial information systems have forced the creation of a highly integrated, nationwide capital market and increased the velocity of money.

A highly integrated, nationwide capital market is being created, driven by the demands of users and facilitated by the application of information and communication technologies. Financial institutions began moving capital on a national scale when it was recognized that capital supply and capital demand within regions do not necessarily meet. These institutions have produced a national market through which needed and available funds within and between regions of the country are balanced. Local financial institutions are able to serve as intermediaries between their customers and national markets because of their access to the financial systems and because of their expertise. The ability of an organization or individual to participate in a capital market is restricted by the quality and quantity of information available on the market, and financial service providers have traditionally had superior access to that information.

Traditionally, secondary markets for both debt and equity securities facilitate the process of intermediation between regions. Underwriters buy securities from the primary issuers and make them available on local, regional, and national markets. Modern information processing and telecommunication technologies have provided increased exposure to securities and therefore have increased opportunities for issuers to increase net proceeds from the paper issued.

Congress mandated the development of a national market system for securities in 1975. National markets are advantageous for capital seekers and investors. The truer and more equitable pricing of funds that results from exposure to larger markets is demanded by market participants. This impact is demonstrated by the success of the National Association of Securities Dealers Automatic Quotation System (NASDAQ), which provides national market exposure to what in the past were over-the-counter stocks. Trading volume on NASDAQ has reached the levels of the New York Stock Exchange as investors are attracted to issues to which they suddenly have access.

The Effect of a National Capital Market on Financial Services

A national capital market results in competition between diverse local and regional requirements for capital. The fundamental problem associated with the national market is whether there is equal access to all potential players. While information technology facilitates the communication of information used as the basis of financial decisionmaking, and therefore has made it easier and cheaper to participate in the national market, in some cases the advantages of a regional market may be lost. For example, regional markets may be more appropriate for the development of capital for new or growing firms that may not be able to compete in a national environment yet make a unique and valuable contribution to the economy of the region. Cost and income characteristics for businesses tend to differ between regions, and it may be beneficial for a firm to have its potential level of return evaluated regionally rather than nationally. While the actual cost of money may be equal in a national market, its cost relative to return may differ between regions.

The exposure of securities and loans to national market circumstances has led to an equilibration of securities prices and interest rates. This trend initially developed on an institutional level and has now encompassed consumer markets. Consumers and small business customers were at one time dependent on local financial institutions because they did not have the knowledge required to operate in a financial market beyond their area. The availability of information on a national level results in more equitable choice and quality in services offered.

The nationalization of capital formation may be a leading cause in the shift in placement of an increasing portion of consumer funds into investment instruments, such as money market mutual funds. This movement is an indication of the importance of information flows in financial decisions. Technology that allows for a rapid transfer of information diminishes the importance of location of both service providers and customers. Return potential has enabled the funds to draw a market share from a broad-based population.

Investment funds may draw capital away from depository institutions and therefore the mortgage market. The individual development of equity represented by home ownership is an important cultural and economic value in U.S. society. Historically, the home mortgage was placed by a depository institution in the same community as the financed property; however, information technology has facilitated the nationalization of mortgage capital markets and changed the ways in which this capital is developed. The movement away from local mortgages may be harmful for consumers in some areas and may remove some incentives for forming ties with local financial institutions.

The development of secondary markets for both long- and short-term debt instruments has been a great benefit for smaller financial institutions. Financial institutions, particularly banks, are able to redistribute and balance capital by buying and selling debt contracts among themselves. Information technology facilitates this process by making it easier for financial institutions to identify potential trading partners and to analyze market opportunities.

While access to the national capital market through the use of information technology may greatly benefit sophisticated investors, some worry that less sophisticated investors, who need help to interact in a national market, may realize lower returns. The national capital market has caused a proliferation of investment choices that entail a higher level of analysis of personal investment goals and opportunities.

At the same time that a national capital market has been developing, the velocity of money—a measure of the number of times per period an average dollar is spent to purchase newly produced goods and services—has been increasing. While the incredible growth in the trading of securities and in asset transactions, as seen in bank deposits, may be driven by market forces, it would be physically impossible to complete the actions required for these activities without communications and computer technologies. While information technology is not directly the cause of an increase in the velocity of money, without its application the velocity could not have increased to the level demanded by the market. This type of constraint could have a severe impact on the economy.

It is now generally accepted that there is no technological constraint to the trading of assets at whatever speed is demanded by the market. Almarin Phillips notes that bank demand deposits in New York City were turned over 1,200 times a year in 1981 as compared to an average of 150 times a year in 1970. He attributes this acceleration to the appearance of new markets, the availability of better information, falling transaction costs, increased liquidity of many assets, and the general rise in interest rates. These factors have put a premium on the efficient management of liquid assets.[5] It would be prohibitively expensive to complete transactions at the demanded speed without the level of technology applied by the banking and securities industries in the last several years.

As the banking industry moves toward multiple settlements during a business day, failure to adopt the needed technology could result in a massive movement of funds out of the financial service industry by corporate cash managers. An indication of this potential was seen in the movement to trade securities off organized exchanges in the early 1970's, when it appeared that the exchanges could not operate at the level demanded. Trading was only returned to the exchanges as information technology increased their capacity and speed.

The increase in trading volume for securities is another indication of the general quickening of the American economy. Share days of 100 million are not uncommon on the New York Stock Exchange, on which a daily average of less than 17 million shares were traded in 1972. And high volume no longer requires the curtailing of trading hours. Long-range planning by the New York Stock Exchange anticipates average daily trading of between 200 million and 250 million shares.[6] Given the requirement for quick settlement, it would have been physically and fiscally impossible for trading to approach this level without automation.

Information technology has given both domestic and multinational firms far greater capability to identify available assets and to direct them to those investments that offer maximum return for whatever period those assets are available. This ability relates to the tremendous growth of money market mutual funds and accounts that are based on short-term investment instruments.

Future Impacts of Technology on Capital Markets

In an integrated world economy, a high degree of capital mobility is required to offset movements in other items of balance of payments.[7] An international capital market has developed, facilitated by the application of information technology. This market is having a major impact on the world by intertwining the economies of culturally and politically diverse nations. Also, worldwide financial centers have emerged in countries such as Hong Kong and Bahrain. Unlike a domestic market, however, there is no overriding international system through which a global economy could be governed. Whereas the United States of America share a common Federal Government and political and cultural rooting, this type of relationship does not exist between nations.

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[5] Almarin Phillips, "Technology and the Nature of Financial Services," *Strategic Planning for Economic and Technological Change in the Financial Services Industry*, Proceedings of the Eighth Annual Conference, Federal Home Loan Bank of San Francisco, Dec. 9-10, 1982, San Francisco, Calif., pp. 5-6.

[6] *NYSE 1983 Fact Book*, p. 4.

[7] R. M. Pecchioli, *The Internationalisation of Banking: The Policy Issues* (Paris: Organization for Economic Cooperation and Development, 1983), p. 115.

The differences between telecommunication industries and regulations in various countries must be recognized as a barrier to the development of global capital markets. Information technology creates new vulnerabilities in international markets.

Information technology has made it possible for financial service institutions in different nations to direct excess capital much in the same way it is directed between regions of the United States. In addition to more sophisticated asset and liability management techniques, improved communication facilities had vast consequences for the rapid emergence of the eurocurrency market for redeployment of international capital.[8]

Communication technologies have also had a particularly strong impact on international wholesale or interbank activities. Interbank activities provide a large portion of the funds for international investment. The use of technology has allowed small banks for the first time to become involved in international banking.

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[8] Ibid., p. 20.

Conclusion 7: Entrants Into the Financial Service Industry

The major new entrants into the financial service industry are, and will increasingly tend to be, organizations that already have extensive distribution and/or communications systems.

A financial service organization that has an established technology infrastructure usually has a competitive advantage in three areas: 1) facilitating the intermediary functions of the financial service industry; 2) providing convenience of location to its customers, including the increased movement to remote banking and other financial services; and 3) in general, improving productivity.

The experience of present leaders in the financial service industry—e.g., Citicorp, Sears, ADP, and Merrill Lynch—indicates that strong distribution and communication systems are major factors in their ability to capture and serve markets. It is expected that the control of or access to distribution and communication systems will continue to be an important indication of the potential success of current industry players and, therefore, an indication of who will be the new entrants into the financial service industry. The identification of potential entrants is important because they help determine the competitive character of the industry.

The Role of Information Technology in Competitiveness

The flow of information is essential to the orderly operation of financial service markets because it is essential to the making and directing of decisions. Information may be a representation of or collateral to the transfer of value. At the same time, cost and accessibility considerations have led to a change in preference for electronic systems from the once-practical paper-based systems for many types of information. The transfer of financial service records is changing from the physical transportation of documents to the electronic exchange of information. The communication systems developed to meet this demand are far more technology-dependent and capital-intensive than their predecessors.

The application of information technology frequently decreases the costs of delivering financial services. The corporation that can automate delivery systems has a competitive advantage because it faces lower total costs. The importance of technology in communication systems is found in time, as well as dollar, considerations.

Availability of Services to Small Financial Service Providers

Lack of access to sophisticated communication and distribution systems could potentially be a significant barrier to small service providers both for entering and competing in financial service markets. A tier of wholesalers of data processing and communications services has developed to supply services to end-users or to small financial service providers that cannot afford to invest in large-scale communications or computer systems.

Entrance by Holders of Communication and Distribution Systems

Existing information technology infrastructures have provided market opportunities in the financial service industries for several corporations. For example, a data processing firm, ADP, is an organization whose entrance into the financial service industry grew from holding a sophisticated computer and communication system. J. C. Penney has applied its communication network to the processing of oil company credit card transactions. Penney's established communication system gave it the opportunity to expand into new markets.

Given the great value of sophisticated communication systems to operating financial service systems, new entrants may be found in established communication firms such as AT&T and MCI, which may find it cost effective to enter the financial service industry as wholesalers of services or, because of their established systems of customer service, as direct service providers.

A successful distribution system may be judged not only by the number of physical locations in which an outlet is placed, but also by the extent to which it provides cohesive coverage of markets. Distribution systems share many of the characteristics of communication systems and are usually dependent on information technology for operation.

Established distribution systems may ease entry barriers to new markets. When Sears entered the financial service market, it had the benefit of an established system of retail stores through which it had community presence. The availability of these locations for the offering of financial services eliminated much of the startup cost involved in selecting appropriate locations for retail businesses, since information on customer traffic and other site characteristics was available. The opportunity cost for Sears of extending its line of commerce to financial services may be assumed to be lower than otherwise might be expected because much of the cost for distribution channels was already paid.

The distribution system of a player in the financial service industry involves not only its physical presence but also its ability to disseminate information. Sears has the most extensive private card base in the Nation, equal in importance to its retail outlets. Because Sears had this communication system in place, it could develop a direct marketing system.

Future entrants into the financial service industry may include corporations that enjoy a strong distribution system such as gasoline retailers. These corporations have a presence through gas stations in urban and rural areas throughout the Nation, a strong fiscal personality, significant card bases, and sophisticated POS systems.

The Effect of New Entrants on Services Provided

The new entrants with strong communication and distribution systems have increased the number of options available to financial service consumers by making a wider range of product offerings and delivery mechanisms available. Communication and computer technology has made it possible to develop far more diverse and complex investment packages that serve a greater range of investors. In addition, the refinement and increased speed of settlement found through the application of information technology also improves the quality of service received.

It is possible that, in the long run, the need for communication and distribution systems may **decrease** consumer options if the market becomes dominated by national firms with little local presence. However, it does not appear likely that the market would tolerate this type of development. Small firms can compete as long as they are able to access delivery systems built and operated by others.

The possibility of cross-entry into the financial service industry by communication firms and others may protect consumers from the effects of monopolization. No matter what happens to the concentration levels in the financial service industry, the availability of additional and diverse organizations to provide financial services if market circumstances are favorable should lead to competitive prices.

The Effect of Telecommunication Regulations on Financial Services

Most segments of the financial service industry are subject to Federal or State regulation. With the application of communication technologies, players throughout the financial service industry may find themselves subject to regulation both of their products and services and of the systems they use.

While it may be expected to be a transitional problem, the applicability of two regulatory structures to the financial service industry may hinder its operation by increasing administrative costs. In the extreme, the economic viability of existing systems could be destroyed. Product development and marketing activities could be adversely affected by regulatory uncertainty about communication facilities. Regulation of communication services may limit the ability of financial service providers to realize the potential benefits of new technologies in internal systems if restraints on their usage are imposed. As a result, new systems could be stymied.

Antitrust Implications

Vertical integration may result in greater market concentration by foreclosing the competitive opportunities of those selling or buying in competition with integrated market participants.[9] Given that distribution and communication systems of an organization may be indicative of possible future entrance by an organization, these systems should also be considered in cases of proposed mergers. Antitrust enforcers should be aware of the possibility that if dominant communication carriers move into the payment system it is possible that their market position in communications may place banks and other financial intermediaries at a competitive disadvantage.[10]

Antitrust enforcers should also keep the increasing competitive overlap in mind when analyzing mergers. The Merger Guidelines issued by the Department of Justice in 1982 identify both established players and firms whose production and distribution facilities could reasonably be adapted for entrance into a market as market participants.[11] The market impact of proposed mergers and acquisitions has to be evaluated, among other factors, by the likelihood of one of the players independently entering the market of the other as a competitor. Therefore, distribution and communication organizations outside of the financial service industry that propose a merger with a current player should be evaluated in terms of their adaptability to financial applications.

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[9] Donald I. Baker and William Blumenthal, "The 1982 Guidelines and Preexisting Law," *California Law Review* 71, March 1983, pp. 311-344.

[10] Donald I. Baker and Beverly G. Baker, "Antitrust and Communications Deregulation," 28 *Antitrust Bulletin* 1, 1983.

[11] Baker and Blumenthal, op. cit., p. 337. Baker and Blumenthal note that the U.S. Department of Justice, Merger Guidelines §I, 47 Fed. Reg. 28,493, 28494 (1982) list the following classes of firms as market participants: 1) firms that currently produce and sell the relevant product, 2) firms whose existing production and distribution facilities could be shifted to enable the firm to produce and sell the relevant product within 6 months of a 5 percent price increase, 3) firms that recycle or recondition products that represent good substitutes for the relevant product, and 4) vertically integrated firms that produce the relevant product for captive consumption.

Conclusion 8: Competition in the Markets for Financial Services

A major uncertainty in the changing structure of the financial service industry is what degree of consolidation and concentration of services will eventually occur. A second major uncertainty is what level and scope of competition in financial service markets would be appropriate and desirable for a healthy future economy.

The compartmentalized structure of the financial service industry established over the past 50 years is in the process of vanishing, and the future structure of the industry remains as yet undefined. In the past, geographic limitations were placed on the areas a bank could serve so that none could position itself to dominate the banking industry. Because banks were limited only to the banking and related business, banks were also effectively kept from using their unique position in the economy to dominate other industries. However, banks were given an exclusive franchise for the taking of deposits and access to the payments system. Only commercial banks were permitted to offer a demand deposit account, and only they had access to the Federal Reserve and the check-clearing mechanism.

Regulations were promulgated for specific classes of institutions; so long as there was no effective way for new entrants to encroach on the franchises that had been granted in legislation, the structure remained intact and was generally able to achieve the goals that had been established for it. However, economic conditions, in combination with the latent capabilities of advanced information processing and communication technologies, encouraged the successful entry of new firms into the financial service industry from such diverse areas as retailing, communication, and information processing.

Significant numbers of those concerned with the long-term effects of the changes now taking place in the financial service industry have expressed concern that one of the outcomes will be consolidation. The number of firms in the industry would be reduced to a point where a small number could dominate the market. Such concentration would directly contravene one of the central themes embodied in established policy. Some also express concern that users of financial services provided by nondepository institutions may be exposed to unwarranted risk because the firms providing the services may be prone to accepting a higher degree of risk than depository institutions are permitted to take.

Even though firms not traditionally providers of financial services have entered the industry and operate outside the constraints imposed on traditional suppliers, they apparently have not weakened it. New entrants have generally been successful in broadening competition in the face of the existing legal/regulatory structure. In recent years, Congress has repeatedly been called on to remove constraints that have limited the ability of the regulated firms in the financial service industry to compete with the new entrants; it has not been asked to act to protect the ground taken over from the traditional service providers.

A key parameter for success in the financial service industry is access to systems based on advanced information processing and telecommunication technologies. Large service providers have the resources to develop and deploy these systems on their own. However, the existing infrastructure of wholesale service providers has made it possible for all firms, regardless of size, to have the requisite access to the advanced technologies. New entrants, taking advantage of the advanced systems, have repeatedly demonstrated their ability to compete successfully with larger firms in the marketplace. As long as this alternative exists, there are few barriers to entering the financial service industry.

Another concern expressed by some is that a financial service industry dominated by a few national organizations would no longer be responsive to local needs of the communities in which they operate. On the one hand, ease of entry will continue to minimize the chance that an area would not be served by institutions responsive to its needs. On the other hand, continuing to regulate the interstate activities of the banks will not guarantee that capital will be available to meet the needs of the areas that generate it. As the pervasiveness of technology-based systems for managing financial resources increases, intermediation by banks will become a less significant portion of bank activities because deposits from which loan portfolios are generated will continue to shrink. There is some indication that banks will become primarily service providers through which funds flow. Therefore, policies that are intended to assure the availability of capital for socially worthwhile projects are more likely to be successful if they focus on nonbank institutions.

Historically, there is some evidence to suggest that large financial institutions are not necessarily successful in their attempts to enter and dominate markets held by smaller firms. In areas where they were able to enter, the larger firms were at least as responsive to local needs as were the local banks that had previously provided service. Fears that the New York City banks would be able to drive the smaller upstate banks from the market were expressed when statewide branching was first permitted.

However, according to a statement by Frederick Hammer, Executive Vice President, Chase Manhattan Bank of New York, "Virtually all the New York City banks that went upstate ended up closing most of those branches. The only branches from those efforts that are profitable are those done by acquisition. In the towns where our banks were able to branch, we were able to provide new services. Studies done by the FDIC indicated that the loan ratios went up in those towns. The banks were doing a better job of serving their communities."[12] On the other hand, this statement says nothing about the propensity or the ability of an organization to enter a market through the process of acquisition, one which Hammer indicates is likely to be successful. Nor does it say anything about their propensity to continue to serve local needs if a dominant position in a market is established.

Evidence indicates that the propensity of customers to switch financial institutions is relatively low and that there must be some significant event to motivate such a change. On the other hand, some believe that packages of services could provide the necessary motivation for customers to change financial service providers and that once new, complex relationships have been established, the inclination to move in the future will be lower than in the past. Securities firms assume that they will be able to establish a high degree of customer loyalty because they are able to offer service regardless of whether the customer is home, on a short trip, or permanently relocating to a new area.* Thus, the firms that can establish a national presence and offer a comprehensive package of interrelated services may be able to generate a degree of customer loyalty that could enable them to dominate the financial service industry.

The States are not waiting for the Federal Government to modify its position with regard to the policies that help shape the structure of the financial service industry. Laws that would permit regional banking have been passed in New England. Some States, South Dakota and Delaware among them, have enacted legislation designed to attract financial service organizations. Thus, even though prohibitions of interstate banking based on Federal law may continue in force, regional banking in significant areas of the country could emerge. Also, organizations that provide financial services in nationwide markets operating from States that have passed permissive legislation may emerge. Federal law permits interstate and cross-industry mergers when it can be demonstrated that they will serve the public interest.

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[12] Frederick Hammer, Executive Vice President, Chase Manhattan Bank of New York, in testimony in oversight hearings before the Committee on Banking, Housing and Urban Affairs, U.S. Senate, May 3, 1983.

*The strategy is also intended to change the loyalty of the customer from the account representative to the firm, a problem that has been facing securities broker/dealers for some time.

No clear picture of the future structure of the financial service industry exists. Some foresee considerable consolidation, with many fewer firms serving the public than at present. Some believe that the industry will consist of a small number of large firms serving national markets and a large number of small firms specializing in specific market niches. On the other hand, others contend that the financial service industry is already heavily concentrated in many respects and that it will not change significantly in the future. Given the contravening forces operating, there is no basis for adopting one of these positions or any others that could be suggested.

However, it is clear that future financial services will be provided by a variety of firms, not just banks and the other traditional participants in the market. New classes of firms have already established themselves in the financial service industry, and there is no reason that the trend should not continue. Thus, policies need to be formulated to account for the influence of the technologies and the opportunities they create for the entry of firms that have not previously been providers of financial services.

A key element in the present structure of the financial service industry is that the customer has the option of investing funds in an account insured by the Federal Government. This type of insurance was one of the elements in the 1930's program to restore confidence in the financial service industry. Because of the existence of the insurance, depositors with balances below the limit of the insurance are fully protected and have not suffered losses as a result of any of the failures that have occurred in recent years. On the other hand, some argue that the availability of insurance and the readiness of the regulators to step in to protect a failing institution have resulted in a false sense of security that has led some institutions to take unwarranted risks in participating in deals put together by others. The secondary effects from the failure and closing of the Penn Square Bank illustrate this point. They also argue that these policies protect the stockholders as much as the depositors and, as a result, the institution will undertake projects for its own account that represent an undue degree of risk.

However, the combination of economic forces and technological applications has resulted in the movement of deposits from insured accounts in financial institutions. Although the introduction of insured money market accounts by depository institutions at the beginning of 1983 was accompanied by some increase in deposits, over the long run there is a distinct possibility that the deposits held by financial institutions will continue to shrink relative to all financial assets. Investors in functional equivalents of depository accounts that are not insured would then be exposed to loss of principal in the event of institutional failure, with the result that the sensitivity of the financial services industry to disturbances in the economy could increase significantly.

Antitrust actions in the computer and telecommunication industries have demonstrated that it is not always possible to define clearly the elements of a market in order to analyze the competitiveness of the firms participating in it. Given the changes in the financial service industry, a situation analogous to that found with the computer and telecommunication industries is developing. As new entrants provide financial services, the lines that determine market boundaries become much less clear than they were in the past.

New entrants often compete only in some parts of the financial service market. For example, a supermarket that operates a network of ATMs is in direct competition with depository institutions that offer comparable services. On the other hand, the supermarket would not be a factor in the markets for commercial loans or trust services.

Even within the community of depository institutions, care must be taken in defining markets. The small, local bank is not a factor in the market for cash management services offered to the largest corporations in the country. Conversely, a branch operated by a major money center bank may be an insignificant factor in a market dominated by a small but very successful bank.

The changing structure of the financial service industry will exacerbate this problem in the future. Thus, great care must be taken in suggesting that one institution will be able to dominate the others in a market. Unless the statement is made in full recognition of the conditions existing in a specific area for a specific package of services, such generalizations are likely to have little validity.

Conversely, one must recognize that the ability to offer a package of complementary services may place a firm at a significant advantage relative to others with product lines that are less broad. Even though the horizontally integrated firm may not dominate any segment of the market in the context of its competition for specific products, when considered in its totality over time, the integrated firm could dominate a market, possibly overpowering market competition.

Events to date have not endangered the basic soundness and safety of the financial service industry. However, one cannot assume that this stability will remain, and constant monitoring of the industry would seem in order. On the other hand, policies developed in anticipation of events not having a high probability of occurrence could foreclose benefits or unintentionally trigger undesirable impacts.

Chapter 9

Policy Issues

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The financial service industry is enjoying a period of rapid innovation in supporting technologies. The effort to use those innovations to best advantage is contributing to rapid changes in the structure of the industry and in the services it offers. On the one hand, technology motivates change; on the other, facilitates it.

Through the applications of technology, the financial service industry provides the public a choice of modern and efficient services more diverse than was available in the past. From another perspective, the introduction of explicit pricing for services, the increased complexity of the menus offered and other effects following from the introduction of technology are not amenable to all users.

Changes in basic social institutions almost invariably raise questions for public policy. The basic tenets that comprise the foundations of existing policy may no longer hold; or, if they do, the existing means of realizing established goals and objectives may no longer be workable. Relationships between and among individuals and institutions may be altered in ways that make some relatively worse off while others become relatively better off. The results of such shifts can be political pressures for new or modified policy goals and mechanisms for achieving them.

Information technology has made it easy to bypass some legal and regulatory provisions. Some new services or altered service packages are being delivered through systems that did not exist when regulatory provisions were written, and some services are offered by institutions not covered by the provisions.

It is likely, therefore, that some of these provisions now only burden the industry unnecessarily, cause unplanned distortions in the market, or place some financial institutions at an unreasonable disadvantage. The very scale and rapidity of the changes and the fluidity and turbulence in the environment within which financial institutions are now operating could cause excessive risk for these organizations and their customers. It is also possible that some of the ends sought in existing laws are no longer appropriate or useful.

Formulating policy issues and options with regard to these changes meets with one immediate and serious challenge. Changes are coming about so rapidly and in so many diverse directions that it is difficult for financial institutions themselves or for outside observers to anticipate the patterns that will eventually prevail.

Nevertheless, it is possible to foresee some of the broad patterns likely to emerge and to anticipate in a general way their likely consequences. It is important to do so because policy decisions made or avoided now may have far-reaching consequences. For example, some potential benefits of the new technology may not be realized. Costs and benefits may be inequitably distributed. Unnecessary burdens may be imposed on industry or on consumers. Civil rights and liberties may be compromised.

Policy is promulgated through legislation and regulation; it can also be imposed through less formal, political activities such as Presidential "jaw-boning." Policy alters market forces and the relative power of the factors that determine price and product mix. For example, limitations on interest rates led to bundling of financial services which, in turn, resulted in cross subsidies. Services could then be provided to some who could not have afforded them had they been required to pay prices based on a true allocation of costs. Now, technology, combined with other forces, is creating an industry structure that explicitly charges for services on the basis of fully allocated costs. Some people may not be able to afford them. If this is judged contrary to the larger public good, it becomes the task of the policymaker to adjust those circumstances through carefully designed policies.

Thus, even though significant uncertainties about the future remain, it is essential that an assessment of the implications of advanced technologies for the financial service industry be made. Many of the policy issues discussed below are not new. Competition and consolidation, fair play, privacy, and security have always been concerns in financial service delivery, even with older paper-based technology.

To identify the public policy issues related to financial services it is necessary to look more closely at relationships between financial services and broad national objectives that reflect various public interests in those services.

Public Interests in Financial Services

Some of the major laws and regulations related to financial institutions express explicitly and implicitly national objectives related to financial services. There is a strong public interest in the maintenance of financial institutions that will:

- assure and facilitate transactions necessary for a strong and growing level of economic activity in the Nation and in all regions and communities;
- encourage savings and capital formation;
- protect the savings and investment of individuals, families, businesses, and social institutions;
- avoid excessive concentration of economic and financial resources; and
- support and strengthen the competitive position of the United States in world trade.

Implicit in the concept of the public interest are also the basic national objectives of national security, equal treatment under law, and a host of well-established civil rights and liberties. Therefore, financial service systems should:

- not compromise national security, or the ability of the Government to implement foreign policies;
- not adversely affect the exercise of civil rights and liberties; and
- not discriminate against some people by depriving them of necessary financial services or placing an unfair burden on them in using those services.

There are also specific Government concerns and interests in financial services. Because Federal, State, and local governments are major users of financial services, they have a special interest in efficiency, low cost, and security in making and receiving payments. For example, the U.S. Department of the Treasury wants to move toward direct deposit of all Federal payments to reduce the costs of this huge volume of transactions.

Finally, the degree to which the introduction of advanced systems for delivering and using financial services may affect the ability of government to use monetary and fiscal policy as tools for ensuring economic stability and growth remains unknown. The increase in transactions and income velocity as a result of this technology could make it more difficult to intervene in unsatisfactory general economic conditions through instruments of monetary policy. Use of information technology, by changing the velocity of money, changes the effective stock of money in the economy at any one time. Technologies can facilitate the delivery of services that effectively monetize assets that in the past were considered illiquid (e.g., the ability to draw on home equity as a line of credit). This could complicate attempts to use monetary policy to reduce inflationary pressures or to stimulate stagnant conditions, although what the effect will be in practice is far from certain. At least, it will be more difficult to define or estimate the stock of money. The speed of transactions will cause the consequences of policy interventions to be felt more rapidly, which could be both beneficial and risky—under the worst possible scenario, it could lead to economic fibrillation.

Possible Changes in the Structure of the Financial Service Industry

Information processing and telecommunication technologies, as applied to financial services, have seven direct and significant effects:

1. They remove geographic and temporal constraints on the delivery of financial services and allow them to be delivered from remote locations and to new and widely dispersed locations, such as homes and offices.
2. They allow transactions to be completed almost instantaneously, increasing the velocity of money in the system.
3. They facilitate complex networks and interrelationships between institutions, markets, and geographical areas.
4. They provide the flexibility for many alternative combinations of services and service features, allowing both "bundled" and narrowly targeted services.
5. They improve productivity and, in general, lower the costs of providing services.
6. They increase the capitalization of financial services, providing opportunity for new providers of intermediate and shared facility services to financial service institutions.
7. They create the possibility of electronic legal tender and the opportunity to monetize a wide variety of assets.

Current and anticipated changes in the structure of the industry and service delivery mechanisms, assuming no interference with present trends, include:

- Increased diversity in the nature of institutions within the industry, in which traditional categories of depository and nondepository institutions are no longer sharply delineated and in which the line between financial and nonfinancial institutions, as defined by products and services, is blurred.
- Development of large, diversified financial institutions offering a wide range of retail services and service locations so that users may have many financial relationships with the same institution.
- Some vertical as well as horizontal integration as diversified firms acquire the internal capabilities to perform functions for which they previously turned to the wholesale market.
- Development of many small, highly specialized institutions that target narrow markets and specified groups of clients.
- Continuing mergers and a trend toward absorption of middle-sized institutions, especially those having a strong local or regional orientation.
- Rapid product proliferation—i.e., proliferation of services that are functionally similar but differ in regulatory restrictions and interest rates and in the distribution of responsibility or risk between providers and users.
- Greatly increased functional integration of the national financial service industry through technological networks and institutional relationships.
- Great reduction in the significance of time of day and location in delivery of financial services.

In developing national policy about financial services, policymakers should take into consideration six critically important questions:

1. **What national objectives should be sought in framing policies related to financial services?**
2. **Is there a need for a thorough restructuring of the regulatory system as opposed to marginal corrections?**
3. **How much competition is appropriate and desirable in this sector of the economy?**
4. **What institutions or services is it essential to preserve and for what purposes?**
5. **What is the appropriate level of risk for providers and users of financial services to assume, and how should that risk be distributed?**
6. **How can the financial service industry support a strong U.S. role in the world economy?**

Generic Considerations in Framing Financial Service Policy

In the sections that follow, salient policy questions pertaining to the financial service industry are presented, and some of the alternatives for dealing with them identified. The first group includes two broad general questions, the second deals with issues related to industry structure, and the third discusses risk allocation issues.

General Policy Issues

Issue 1: What are the alternative approaches that could be used if a review and restructuring of laws and regulations related to financial services were undertaken?

Information processing and communication technologies have already had a profound effect on the handling of financial data. The capabilities that these technologies offer—efficiency, speed, integration of activities over a wide area, flexibility, and networking—are powerful. Because these technologies change both the way data is handled and the way funds are transferred between competing uses, they affect the allocation of resources in a dynamic economy. Moreover, the technologies will continue to develop rapidly and probably in unforeseen ways.

Some argue that, just as the effectiveness of many laws and regulations has already been significantly diminished by information technology and associated structural changes in the industry, any regulatory revisions made now will also be subject to rapid obsolescence, as new technological capabilities are developed.

But piecemeal revision is in fact well underway. The question is whether it should continue to be done in bits and pieces, lagging behind and reacting to changes; or whether a new system of laws and regulations should be designed to guide and control future changes?

Two of the most recent pieces of legislation were developed in reaction to changes that had already occurred in the market. The Depository Institutions Deregulation and Monetary Control Act of 1980 was partly motivated by a finding of the courts that the deployment of automated teller machines (ATMs) by thrift institutions violated existing law. Offerings of zero-balance checking accounts by commercial banks and other newly developed services also challenged the existing legal regulatory structure. If Congress had not acted, significant investment in advanced equipment and services that had proved attractive to consumers would have had to be abandoned. The Garn-St Germain Act of 1982 was passed in part because the rise in short-term interest rates had caused funds to shift out of depository institutions to money market funds and had thrown the cost of liabilities and the earnings of assets held by the thrift industry so far out of balance that the viability of these institutions was threatened.

The rate of change in the financial service industry has not abated since the passage of this legislation. There is every expectation that coming years will see changes occurring at an equal or faster rate than that of the recent past. Financial service providers will continue to rely heavily on technology to work around policies they believe limit their ability to operate effectively in a changing environment.

Policy Options for Issue 1

Congress has two options:

1. Continually fine tune the legal/regulatory structure to account for short-term changes and trends in the forces that shape the financial service industry.
2. Undertake a fundamental redesign of the policy structure governing the financial service industry.

Option 1: Continue to modify existing legal/regulatory structure to reflect short-term changes.

This course reduces the possibility that there will be an abrupt change in the operations of the financial service industry. Congress would continue its ongoing oversight of the financial service industry and continually fine tune policy to meet the needs of evolving conditions. However, Congress may find itself trying to mitigate the undesirable effects of change after the time has passed when preventive measures might have been taken. Also, the structure that may result from this approach is likely to become so complex and cumbersome that it will hamper the efforts of the financial service industry to serve the needs of the Nation.

Option 2. Undertake a fundamental redesign of the policy structure.

Congress may choose to step back from the problem, the changes that have taken place in the conditions that shaped existing policy, and formulate new policies. Such a policy structure, because it would be coherent in its treatment of the elements of the market and the industry and clear in its concepts of national needs and the public interest, is likely to be more robust in the face of future change than policies developed incrementally.

A comprehensive review and reformulation of the policy structure governing the financial service industry will require time; and the rate of change in the industry will not abate while new policies are being formulated. Ongoing events will require response and divert attention from the long-term perspective. The task is difficult but, realistically, doable.

Issue 2: What are the mechanisms available to Congress for implementing policy pertaining to the financial service industry?

Specifically, how should tradeoffs be made between the objectives of maximum economic efficiency, protection of local interests, and other social objectives?

Policy Options for Issue 2

Congress has three broad options:

1. Continue relative deregulation or market-determined solutions by continuing to relax constraints on the industry and by taking little action to neutralize events taking place in the market.
2. Reregulate, taking into account the factors that have changed the effects of various provisions of the old structure on providers and users of financial services.
3. Instead of comprehensive regulation of most services, establish compensatory programs that work through the marketplace to bring about conditions deemed desirable. (Organizations such as the Federal Home Loan Mortgage Corporation and the open market operations of the Federal Reserve serve as precedents for this alternative.)

Option 1: Continue deregulation.

Congress may conclude that maximum economic efficiency, both in delivering services and in using those services to direct funds to productive uses, is necessary to support a rising level of economic activity. If Congress also concludes that the best way to assure this efficiency is to free the financial service industry to respond sensitively to market forces, then it may opt for further deregulation.

The industry, if allowed to follow the path it is now on, will effectively become less regulated over the next decade. Much of the major legislation focusing on depository institutions and investment banking has already been neutralized by events or has been revised to accommodate past changes. Major new entrants in the financial service market operate outside the purview of the existing regulatory structure. Some States have taken actions that further reduce the effectiveness of existing Federal legislation.

It is necessary to remember, however, that deregulation at the Federal level will in all likelihood result in greater diversity in State regulatory strategies. This lack of consistency could itself introduce inefficiencies in the financial service sector. The patchwork of State regulation has already posed difficulties for those that want to deploy regional and nationwide ATM networks. Institutions now seek to establish portable activities such as credit card processing in States that permit them the greatest freedom. This will affect the market by introducing inefficiencies in allocation of financial resources and service delivery mechanisms and could result in a mix of financial service products in some States that is qualitatively different from that available in other States.

The number and diversity of options available to users will increase and will be fully adequate to sustain and promote a healthy overall level of economic activity in the Nation. However, the benefits of these services may carry some risk of pulling financial resources away from some local communities and of compromising some socioeconomic objectives. The general effect will be to shift financial resources toward their highest economic use without regard for social values. There is, for example, some possibility that funds will drain from regions or communities in economic distress or with a less attractive balance between risks and return than other regions. Large national institutions may be less interested in community needs than small local banks. Banks are required, under the Community Reinvestment Act, to give high priority to meeting the needs of their communities, although there has been little pressure to do so. Other kinds of financial institutions do not have this requirement. Unless ease of entry for new competitors continues and the market opportunities are sufficiently attractive to draw them in, local needs may go unmet, and Congress will then be faced with the need of rectifying inequities.

Alternatively Congress could limit the percentage of loan capacity that a financial institution makes available for national and international use. The highest economic use for resources is not always the same as the highest social priority. An adequate supply of housing and opportunities for home ownership are, for example, generally accepted as national policy objectives. So, too, are protection of small farms and small business opportunities.

Under strong competitive pressures, helped along by rate fluctuations and a tight money supply, money may tend to move away from long-term, fixed-interest loans, such as mortgages. This could have significant detrimental impacts on the supply and cost of housing, the construction and real estate industries, their suppliers, and government housing programs unless alternative loan instruments are developed. Money may also be funneled away from loans for local entrepreneurs and small businesses and from rural banks that supply seasonal loans to farmers.

On the other hand, as financial resources are drawn into high-growth areas, they will tend to moderate interest rates and have a stabilizing effect. This would continue the function of redistributing financial resources that has been historically performed by the financial service industry.

Thus, policies that encourage highly competitive national money and capital markets may produce significant economic benefits, even though there is a potential penalty in terms of limiting the funds available for social programs that have been considered to have high social value but produce little tangible product.

Option 2: New regulations.

If, on the other hand, Congress chooses to develop a new regulatory structure for the financial service industry, it will be faced with the formidable task of identifying a set of policy variables that will be comparatively insensitive to changes brought about through the operation of market forces coupled with the influence of technological change. Some have suggested, for example, that regulation be by function, as is the case with the Fair Credit Reporting Act, which places specific requirements on all who offer credit to the public. Others believe that regulation by specific product would be appropriate. For example, any provider could offer a federally insured account as long as specific criteria with respect to reserves and auditability were met. Still others would continue the regulatory focus on institutions, and others would focus on the systems used for delivering services. Some combination of these approaches could be viable. Each has its strengths and weaknesses. None would be simple to develop, and all would be difficult to insulate from the kinds of changes now taking place and those expected in the future.

Option 3: No comprehensive regulation; instead, active Federal role in marketplace.

Finally, Congress could establish a role as an active participant in the marketplace for the Federal Government. It could, for example, provide payment services for areas abandoned by firms in the private sector. It could enter the financial markets, as it now does in the case of mortgages and student loans, to assure the availability of funds for socially worthwhile products. As noted, market intervention of this type has a precedent and does not put the Government in the position of having to anticipate the specific effects of technology and market forces on the availability of capital and on the accessibility of services to the public. Such a policy would be robust. It could, however, add substantially to budget deficits.

At a minimum, some Federal presence beyond an insurance program to ensure the safety and soundness of the financial service industry is likely to be required. But a debate such as the one about the Federal Reserve as a provider of financial services is likely to develop and intensify over time whenever Government actions encroach in areas the private sector feels it can serve adequately. Also the Government may not be able to adjust rapidly enough to changes in market conditions to react in a way that does not introduce instabilities into the marketplace.

Structural Issues

Issue 3: What levels of concentration in the financial service industry are consistent with the goal of preserving competition among providers of financial service?

One of the fundamental objectives in financial service policy has been to prevent the excessive concentration of economic and financial resources in relatively few powerful organizations. This has, for example, been the motivation for prohibitions on interstate banking and intrastate branching, for preserving the unique role of banks by limiting their activities, for insisting on sharp separation between categories of financial institutions, and for controlling interest rates according to the type of accounts covered. These provisions were in part to protect smaller or specialized institutions, especially local institutions, against unfair competition from very large institutions and in part to maintain a diversity of niches within which competition could flourish.

These regulatory strategies have been overtaken by the use of information technology that destroys the advantage of proximity, allowing institutions to share data banks and delivery mechanisms and by institutional relationships that ignore both jurisdictional boundaries and regulatory definitions of institutional categories. The new technology also has paradoxical effects on economies of scale. To compete in a national money market, an institution must offer its services to a wider market, deliver them without regard to the location of the user, and support these activities with a large volume of transactions. On the other hand, through access to shared networks and wholesale support services, even very small institutions can now enter and remain viable in local markets.

Regulatory strategies have already been modified to respond to these economic and technological pressures, but on a piecemeal basis. As a result, traditional financial institutions are fiercely competing with one another and with new organizations, including nonfinancial institutions, that are entering their markets. It is not clear how existing antitrust tests apply to this sector in these circumstances, since it becomes progressively more difficult to define markets. It is clear, however, that in spite of—or because of—the fierce competition now underway, the potential exists for increased concentration of financial resources and for the development through repeated mergers and acquisitions of large organizations with excessive size or power in financial markets.

It is possible that the kind of competitiveness that was desirable in the past, as measured by the number and size of institutions and the scope of their markets, is no longer appropriate in view of several changes:

- the increased size of the population,
- the increased level of U.S. economic activity,
- the increased size of industrial markets,
- the increased scale of commercial organizations,
- the increased volume of international trade,
- the increased diversity of services,
- the redefinition of the roles of financial institutions, and
- the decreased advantage of proximity for users of financial services.

Congress will want to consider in the context of these changes whether intense and increasingly uncontrolled competition will work to the detriment of some important segments of the industry, will encourage financial institutions to take excessive risks, or will result in harmful consolidation of economic and financial power.

Policy Options for Issue 3

Option 1: Allow market forces to continue as a primary determiner of the evolutionary path for the financial service industry even though they may create major consolidated, national services organizations.

As long as entry barriers remain low, small firms are likely to appear on the scene to meet local needs. If banks remain subject to special restrictions, they will be at a competitive disadvantage relative to other kinds of financial institutions in operating in the national market. Continued reliance on existing antitrust legislation to prevent excessive concentration of financial power would face increasing difficulty in defining markets and market participants for the purpose of antitrust enforcement actions.

Option 2: Define criteria under which mergers would be permitted and firms would be allowed to enter or leave a market.

Again, with this option, it would be difficult to define market boundaries for the purpose of evaluating adequacy of competition following a merger. Problems of defining minimal services levels and alternatives for meeting them would have to be resolved before decisions on permitting firms to exit a market could be made. Unless the law were structured to prevent it, unregulated services providers would continue to use new technologies to enter the market outside of the existing regulatory structures. Such entrants would affect the competitive balance in a market and would be free to exit even though the result would be a level of service that falls below acceptable minimums.

One or more organizations, public or private, could be assigned the role of provider of last resort to fill voids in the availability of financial services. However, regulators would then be faced with the problem of determining when alternative suppliers have, in fact, abandoned a market, making it necessary to call on such providers.

Option 3: Highly regulate only a specific set of financial services.

The model of the telecommunication industry could be followed, in which a specific set of financial services such as deposit-taking would be highly regulated. Competition in these product areas would be tightly controlled and maintained so that the market could not be controlled by just a few firms. All other financial services could be offered by almost any type of institution in a virtually unregulated market. The regulated financial service institutions could offer unregulated products only through arms-length subsidiaries so that there would be no cross-subsidization between regulated and unregulated services. This approach would have the advantage that those financial services where safety and soundness is of greatest concern would be tightly controlled, and competition would be preserved. But the fact that technological means would almost always be found to bypass any boundaries that might be drawn between product areas suggests that this approach will be difficult to implement.

The definition of basic financial services—those to be regulated—and the identification of those offering them would be difficult. Service providers would, using innovative information technology, tend to design services that closely approximate but are not technically identical to regulated services and to offer them in the unregulated market. There would be no guarantee of adequate competition in the unregulated markets, and antitrust laws would provide the only means through which excessive concentration of financial power could be prevented.

Issue 4: What modifications, if any, could be instituted regarding restrictions on interstate banking?

Restrictions on interstate banking were intended to prevent financial resources and control over credit from becoming progressively consolidated in a few powerful institutions. They were also meant to maintain a local orientation and interest and to preserve for consumers the convenience and access afforded by proximity to financial services. Lately, these restrictions have been in large part rendered ineffective. The sharing of ATM networks allows some banking functions to be carried out from remote locations. Some banks, with regulatory approval, have bought banks and savings and loan associations in several States. Nondepository institutions offer services nationwide that are perceived by users as functionally equivalent to traditional bank accounts. Regional and national networks have made proximity to the service provider no longer a necessary measure of convenience for the user. However, restrictions on interstate banking still place banks at some disadvantage vis-à-vis other financial institutions. For example, facilities to accept demand deposits generally are not placed across State lines, but corporate clients are provided this service indirectly by means of zero-balance accounts linked to consolidation accounts in another State. Interstate banking restrictions have probably protected some inefficient institutions that would otherwise have been driven out of the market.

Policy Options for Issue 4

Option 1: Remove or modify restrictions on interstate banking.

Congress could act systematically to remove all remaining restrictions on interstate banking. To do this would require Federal legislation repealing the interstate banking prohibitions in the McFadden Act and the Bank Holding Company Act, thus withdrawing Federal consent to State statutes blocking interstate commerce. The overall effect would be further dissociation of financial service institutions from orientation toward a particular community, market, or region, and further integration of a national financial service market. Removing restrictions on interstate banking would tend to strengthen a trend toward consolidation, since some financial institutions would probably not survive competition with large national firms. On the other hand, it is possible that financial services might be extended to some now underserved or isolated communities from depository institutions in neighboring States.

Congress could, by amendment to the McFadden and Bank Holding Company Acts, modify restrictions on interstate banking to allow and encourage areawide banking in multistate metropolitan areas, or regional banking in multistate market areas (as is already done in New England under an interstate compact).

Option 2: Reinforce limitations on interstate banking.

Alternatively, Congress could strengthen restrictions on interstate banking by removing all loopholes. The Federal Reserve has just moved to plug one loophole by redefining commercial deposits to include NOW and Super NOW accounts. Following the reasoning that led Congress to pass legislation legitimatizing ATMs deployed by savings and loan associations after the courts had declared them illegal, it does not appear feasible nor desirable to dismantle interstate ATM networks or to prohibit the cash management programs offered by brokers. It would be possible to extend reserve requirements to all institutions that operate depositlike accounts, including securities dealers. This might, however, imply giving all of these institutions access to the payments system or to deposit insurance.

One possibility is to establish rigid criteria for entry to and exit from the market, including criteria for permitting mergers. But, such criteria would be hard to define and enforce because institutional boundaries and product lines have already become so blurred. Criteria would have to be defined in terms of market share or in terms of control over deposits or total assets. Given the heterogeneity and fluidity of the industry, this would also be hard to do.

Other possibilities are to continue to prohibit holding companies from owning depository institutions in more than one State, as was the case until the 1980's, or to subject all depository institutions to a rigid prohibition on interstate banking, which would require preemption of State laws and extension of relevant Federal laws to cover savings and loans and credit unions.

Some way might be found to strengthen and broaden the Community Reinvestment Act, possibly by requiring local development loans at a level pegged to the level of deposits gathered from an area. This would be a factor limiting the flow of funds out of the areas generating them.

Issue 5: How might law and regulation be used to focus the attention of various classes of financial service providers on specific market areas?

Federal policy since the 1930's has allocated specific functions to specific financial institutions. But recently, a combination of technological innovations and market forces has significantly weakened the functional distinctions between types of financial institutions. This condition has developed gradually, with few of the steps along the path involving positive decisions by policymakers. It may be appropriate now for Congress to reexamine the question of whether public interests still require the limiting of some roles and functions to a special category of financial institutions.

Banks and thrifts are unique institutions because they alone have access to the payment system. Funds are transferred from one account to another only within banks. All transactions not carried out by exchange of currency (except for some internal clearing) are ultimately culminated within the banking system, and all financial institutions must ultimately call on a bank for the final step in delivering a service. Banks also allocate credit by making and guaranteeing commercial loans.

Because of this dependence, the safety and soundness of banks—and public confidence in them—are an essential underpinning of the economy. National policy therefore has always been to treat banks differently from other kinds of financial institutions and to prohibit them from engaging in other kinds of commercial activity. Specifically, the goals of this policy have been to:

- insure the soundness of banks (originally the purpose of both reserve requirements and depository insurance);
- limit the risks that banks could assume;
- prevent conflicts of interest, such as would occur if banks directed investment to or allocated credit to commercial activities in which the bank had an equity interest, or if banks required borrowers to purchase insurance underwritten by the bank; and
- prevent concentration of financial resources by forbidding banks to participate in certain kinds of investment activities, such as underwriting stock issues and casualty or life insurance.

Other financial institutions, and in some cases nonfinancial institutions, are now encroaching on activities once limited to banks —i.e., offering accounts that consumers perceive as functional equivalents of depository accounts but with the advantage of higher interest rates. Nondepository institutions are buying banks, gaining access to the payment mechanism through them, and acquiring their assets and customers. They are then abrogating one or more of the two functions that define a bank (i.e., accepting commercial deposits, making commercial loans) in order to escape Bank Holding Company Act prohibitions on nonfinancial activities.

Banks and bank holding companies, in retaliation, are seeking to expand into other services, for example, offering insurance in States where laws permit and increasing their offerings of data processing services. Low-cost or free deposits, the traditional source of funds for banks, are drying up as corporations practice zero-balance banking and savers transfer their money to higher interest accounts and money market funds. This forces banks to try to expand their customer base by offering a greater diversity of services and to increase fees.

However, as banks and other depository institutions expand their activities into other lines of commerce, the level of risk they are subject to may increase. Any increase in institutional risk is accompanied by an increase in the levels of risk for both the stockholders and clients of the institution to the extent they are not covered by deposit insurance. Ultimately, the level of risk facing the financial service industry as a whole would increase.

The general policy of deregulation suggests that financial institutions could compete on an equal basis if barriers between various types were dissolved. For example, thrift institutions were, for a time, severely threatened when they were stuck with low-yield portfolios when interest rates rose; they may be so threatened again. Federal policy has been to try to save troubled thrift institutions by allowing, encouraging, or arranging mergers. This includes mergers across State lines and mergers of mutual savings banks with commercial banks. More recently, Federal savings and loan associations have been allowed by the Garn-St Germain Act of 1982 to offer consumer loans of up to 20 percent of assets and to offer other consumer services so that their portfolios will contain assets and liabilities with better matched maturities.

On the other hand, thrift institutions in the past received some preferential treatment because they are the major source of loans for housing. An adequate supply of housing and a high rate of home ownership are widely accepted as social policy objectives, and a decline in the housing market has severe impacts on other sectors of the economy.

Policy Options for Issue 5

Option 1: Modify powers to offer financial services.

Congress could repeal Federal laws and regulations limiting the services that banks can offer and the activities in which they can engage. The U.S. Treasury has proposed that through holding company subsidiaries banks be allowed to engage in virtually all financial services. This is a movement toward deregulation, to "put all the players on a level playing field." It would be likely to increase the purchase of banks by other financial and nonfinancial institutions and to stimulate the buying up of small banks by bank holding companies. It would increase the possibility of banks exerting pressure on customers to buy nonbank services or products.

Congress could instead tighten the loopholes in laws and reaffirm the special and limited role of banks. Institutions that accept governmentally insured deposits could be permitted to offer only limited other services. Institutions that provide other services (either financial or nonfinancial) could be forbidden to own or control institutions that accept insured deposits.

A third possibility is to extend the barriers against banks diversifying their services by bringing all State banks (including those that are not Federal Reserve System members) under the Glass/Steagall Act through Federal preemption, so that States cannot use permissive laws to attract banks into relocation.

Finally, Congress could make modifications in laws and regulations to restrict (or allow) specific activities. It has been proposed for example that banks or bank holding companies be permitted to:

- underwrite mortgage-backed securities and offer mortgages so as to lower mortgage interest rates through increasing competition (as the Federal National Mortgage Association already does);
- offer mutual funds, in order to bring down management fees and sales commissions; and
- underwrite municipal revenue bonds, to supplement the effects of discount brokerage in increasing the market and lowering costs for municipal and State governments.

Option 2: Modify powers to effect mergers.

Congress could continue to allow other institutions to merge with or buy savings and loan (S&L) associations. If the acquiring firms use the savings and loan associations as sources of cash, the general effect will be a gradual reduction in money available for mortgages. Any company can now buy an S&L. Only if the company owns more than one S&L—and is therefore an S&L holding company—must it restrict its activities to housing finance, or even continue to offer housing finance. Nonfinancial institutions have already seized on the opportunity to buy S&Ls to gain access to some of the privileges and prerogatives of depository institutions, for example, federally insured accounts.

Congress can continue to allow mergers between thrift institutions, as the Federal Home Loan Bank Board is now doing. The likely outcome will be a smaller number of larger thrift institutions, but this may not solve the problem of attracting an adequate supply of funds.

Option 3: Provide incentives to support specific activities.

Congress could further provide capital assistance for thrift institutions. A Federal subsidy for thrift institutions could be justified on the grounds of the high social priority of housing, but it would add to Federal expenditures, increase the Federal deficit, and set a precedent when other financial institutions run into trouble. Congress could revise tax laws to encourage S&Ls to diversify their services further and to broaden their revenue base. It is not clear whether without this incentive the S&Ls will diversify enough to generate increased earnings.

Congress may want to provide incentives to stimulate other sources of mortgage money rather than attempting to turn back the clock on thrift institutions, which may not be operationally possible.

Issue 6: How will further deregulation of telecommunications affect the financial service industry?

An important consideration for future financial service policy will be the cost of telecommunications. As a result of the breakup of AT&T, Congress is now coming to grips with a broader issue of control of telecommunication costs; specifically, with the issues of access charges. It is expected that following the breakup, long-distance telephone rates will decline as a result of increased competition between suppliers, while local communication rates will tend to rise to compensate regional telephone companies for the loss of income from the Bell system. Congress is debating whether to levy a monthly access charge for all telephone use, which would tend to decrease the need for high overall local rates.

The distribution of function within the design of a system to deliver financial services is directly related to communication costs. Increased costs for local communications may discourage the use of third-party data processors, and small financial institutions may find it more difficult to enter the market or survive in the market. Financial institutions will attempt to move data processing toward the end-user in order to minimize the time a user must remain connected with a service provider's computer, i.e., encourage home banking. But consumers may reject this service entirely if either entry or maintenance costs are too high.

Comment on Issue 6.—The factors and relationships that must be considered in developing telecommunication policy are extremely complex and full consideration of them is beyond the scope of this assessment. However, Congress should be aware that telecommunication costs have a strong and direct influence on the economics of financial service delivery systems. Changes in telecommunication policy can result in the need to modify the structure of financial service delivery systems considerably.

Issue 7: What steps could be taken to realign the legal/regulatory structure to make it conform closely to the changing structure of the financial service industry?

Laws and regulations generally apply to specific categories of service providers. The operational differences between depository and nondepository institutions are progressively eroding, but these categories are still subject to different regulatory bodies. They have, in some cases, different interest rate ceilings, and they are subject to different restrictions on interstate operations and on intrastate branching. A financial institution, in fact, can sometimes select its regulatory climate by changing its organizational structure. S&L associations enjoy special tax incentives if a majority of their activities are housing loans. Accounts in depository institutions are federally insured, while other kinds of accounts are not. The buyer of services has different benefits, different risks, and different safeguards and rights, according to which service provider is selected. The consumer, however, is often unaware of the subtle and detailed differences.

Policy Options for Issue 7

The problem of how best to design, or revise, a regulatory structure for the financial service industry involves many subsidiary issues, such as Federal deregulation versus Federal preemption, institutional versus functional regulation, and self-regulation versus government regulation. The options considered below are not necessarily mutually exclusive:

Option 1: Design regulations to apply to functionally defined services and achieve specific policy objectives, without regard to the institutional provider of the services.

This option would put all financial institutions competing for a particular market niche on a more equal footing. It would mean, however, that each of an institution's services or functional activities would be considered separately. Yet the total mix of services offered would affect the behavior of the providing institution, the level of risk that it assumes, and its relative power in the marketplace. If various regulations were administered by different regulatory agencies, each financial institution might be subject to multiple regulatory agencies that may at times have overlapping or contradictory requirements and restrictions.

Option 2: Federally preempt all State legislation and regulation of financial services.

This option would provide consistency and reduce uncertainty for the industry with the possible result that financial service providers would become more active in developing and deploying services that the public would find attractive and useful. Yet the existing dual banking system has served well in meeting varying needs for financial services. Federal preemption would eliminate this duality and could reduce the degree of responsiveness of financial service providers in meeting local needs.

Option 3: Abolish all Federal regulations, allowing the States to control financial services fully.

This alternative would allow each State the maximum opportunity to achieve local objectives and to meet local needs for financial services. It would also encourage many practical experiments and much innovation as States adopt alternative regulatory strategies. But States would also be prevented by the Commerce clause of the U.S. Constitution from barring entry by out-of-State banks. Nationwide financial service institutions would, how ever, suffer from the inconsistencies in restrictions and requirements.

Option 4: Combine all Federal regulatory functions pertaining to financial services under one Federal agency, mandated to develop an internally consistent system of regulations for all financial services.

On the one hand, this alternative would introduce a degree of consistency into the regulatory structure that is now lacking. Institutions would no longer be in a position where they seek charters from the agency that best suits their intended mode of operation. The increasing homogeneity of the market for financial services would be recognized in a unified regulatory structure.

Yet, the regulators serve the interests of specific constituencies that consist of both the institutions they oversee and their customers. If this diversity of perspective were eliminated, specific needs could go unmet.

Issue 8: Concerns of foreign governments regarding the protection of individual privacy could lead to the erection of barriers for American financial service firms doing business overseas. What steps could the United States take to address these concerns or circumvent the barriers?

Not only is the Nation continually moving toward a more highly integrated national economy, but it is increasingly knit into a global economy in which markets, trade patterns, fiscal and monetary policies, and currencies are linked across national boundaries.

Worldwide delivery of financial services has, for well over a century, depended on telecommunications and is now more than ever completely dependent on advanced technologies. Rapid and free movement of funds and related data internationally is essential. Financial institutions and other types of enterprises have branched across national boundaries and depend heavily on being able to move data freely, and confidentially, between plants and offices in several countries. The ability to access resources anywhere in the world from any other location has become an important factor in the operation of multinational corporations and in international trade.

Financial service organizations operate centralized systems that concentrate data processing for worldwide networks at one or a very few centralized points. Some, such as those that provide credit authorizations at point of sale, must be accessible from thousands of locations and must have a high degree of reliability. They move customer transaction data at high speed across all boundaries.

The ability to initiate a transaction from a remote location unfortunately also implies the ability to initiate fraudulent transactions; to monitor, interfere with, or extract data from a system from remote locations.

In a sudden hostile confrontation with another country, such as occurred with the Iranian hostage situation, the option of freezing the assets in the United States of the foreign power may be lost. Electronic execution of an order to transfer the assets from U.S. jurisdiction could be completed more quickly than a freeze order could be made effective. Foreign-owned banks might also, in some situations, provide to their governments or industries privileged information about U.S. industry.

Some nations have passed laws limiting the collection and dissemination of data associated with individual accounts across their borders, whether to safeguard the privacy of citizens, to protect trade positions, in the interest of national security, or for other reasons. Some nations are taking the position that they will not allow some kinds of data to be sent to nations that do not have restrictions on access and movement of data that are at least as stringent as their own.

Such restrictions could cause problems for U.S. firms because this country has not chosen to restrict the collection and dissemination of data in ways that would be seen to meet such requirements. To do so may place the United States in a position of establishing domestic policy in response to requirements arising abroad, a situation that may become more common as the global economy becomes more highly integrated and interactive.

A related concern is the possibility that international data-processing centers concentrated in a few countries are vulnerable to terrorist or military attack. As the reliable and orderly flow of international information becomes more critical to the U.S. economy, policymakers and national security planners must be aware of these vulnerabilities.

Worldwide information services may tend to increase global debt exposure and under some conditions could be destabilizing to world currency, commodity, and security markets. However, they could also be used to monitor and control international debts and repayments better and to overcome the destabilizing effects of a major debt default.

The national interest here is threefold: to stimulate and support the U.S. position in world markets, to further U.S. international diplomatic objectives, and to maintain national security.

Policy Options for Issue 8

Option 1: Establish no stronger protections for individual privacy than already exist.

The United States might test the proposition that the desire to have full financial relationships with institutions in the United States will be strong enough to overcome all other considerations. But the possibility exists that foreign governments with strong privacy protection laws may not be willing to allow the free flow of financial and payment data to and from the United States without specific protections instituted at a level commensurate with those provided their own citizens within their own borders. Any foreign bans that are instituted may focus only on electronic transmission of personal data to and from the United States, in which case the alternative of using nonelectronic media would still be available but could result in significant delays in the movement of funds and data.

At this point there is no compelling force motivating change. It does not appear to be an imminent probability that one or more nations will significantly restrict the movement of financial data to and from the United States. But this situation could change rapidly, and if this option is chosen Congress will want to continue monitoring developments in this area.

Option 2: Institute policies defining more precisely the conditions under which financial data can be collected and disseminated across national boundaries.

Under this option, U.S. privacy protection law would be harmonized with foreign laws to a greater extent, at least in the case of financial services data. Such policy might become necessary, should foreign privacy laws come to be applied to data transmitted and stored in computer systems on U.S. territory. Although Federal privacy law has not, in general, been applied to privately held data systems nor is there presently significant overt domestic pressure to extend it in that direction, precedent does exist in the particular case of banks for Federal laws concerning the handling of personal information.

Issue 9: What organizations could be granted access to the mechanisms for clearing checks, securities, and other payment instruments such as credit card drafts?

Only depository institutions now have direct access to the payments mechanism—clearing accounts with the Federal Reserve System, membership in local and regional clearinghouses, and membership in automated clearing house associations. Securities broker/dealers clear listed stocks and bonds through the organized exchanges, and market makers clear issues traded over the counter. Clearing mechanisms provide the means by which funds are transferred between and among accounts held by approximately 40,000 institutions in the United States. Without this means of conveying payment instructions between institutions and settling accounts, there would be no payment medium other than cash. Similar networks exist between the airlines for clearing among carriers that honor one another's tickets and between petroleum companies for settling crude oil accounts.

The essential elements of a clearing mechanism are the existence of an account through which net settlement can be accomplished and a means for transferring instructions that tell the account holder the amount to be transferred and the party to be credited. Banks have traditionally been the only ones able to establish settlement accounts and be party to the network for accomplishing the required information transfers.

In the present environment, nondepository financial institutions establish relationships with banks to obtain access to the payment mechanism. Drafts on accounts held by the nondepository institutions are cleared through the existing payment system and paid from a common account, normally maintained at zero balance, at a clearing bank. Only when the drafts are presented to the nondepository institution with whom the individual customer deals are the funds debited from the individual's account.

Banks and other organizations are not restricted in establishing arrangements for processing drafts similar to those in existence between operators of money market funds and banks.

For example, if the employees were agreeable, an employer could make an arrangement whereby employees are credited daily on the company's books with wages earned and are permitted to write drafts against those funds. The employer would then fund an account with a depository institution to cover drafts as they are presented and debit the accounts of individual employees for appropriate amounts. Regardless of the balance between benefits and drawbacks, such an arrangement would be operationally feasible.

The arrangements for clearing through a depository institution with access to the payment mechanism can be seen as being somewhat artificial. Given the technologies now available for moving and processing payment information, one could argue that others besides banks be given the option of establishing clearing accounts with institutions that offer them. A routing-transit number would have to be issued to any organization permitted such access to the clearing mechanism.

The question remains as to whether it is in the public interest to allow such arrangements. On the one hand, the existing regulatory structure provides assurances that parties to the clearing mechanism will be able to settle accounts as required. Opening the mechanism to unsupervised nondepository institutions not bound to existing requirements to meet settlement schedules could weaken the system and hence decrease the safety and soundness of the financial system as a whole. Under existing arrangements between banks and fund managers, the bank must settle with the payment system, even if the fund fails to meet its obligations. On the other hand, requirements could be established to ensure safety and soundness of the system that would have to be met by nondepository organizations that may be granted direct access to the payment mechanism.

Policy Options for Issue 9

Option 1: Retain restrictions on access to the payments mechanism.

Congress could choose to retain the present system whereby membership in clearing systems is limited to organizations meeting specific criteria. One could argue that the present mechanism works well and has been able to accommodate the changes that have taken place in the financial service industry. The safety and soundness of the industry have been well protected, and changes that create the possibility of weakening either should not be allowed.

On the other hand, there is a real possibility that innovative people will develop clearing systems that will operate outside of established channels. Off-market trading is a reality, and there is nothing to prevent the emergence of analogous systems for clearing payments. Nondepository institutions have already gained access to the payment mechanism by acquiring banks and S&L associations. Electronic systems (especially packet switching) will lead to diverse channels for transmission and perhaps settlement, as will the requirement for explicit pricing of Federal Reserve services. Thus, as in so many other parts of the legal/regulatory structure governing the financial service industry, the present rules for access to the payments mechanism may be circumvented by applications of available technologies.

In the extreme, Congress could rule that all payments pass through the established payments mechanism. However, with the existence of private clearing arrangements between financial institutions and the multiplicity of systems for clearing payments, it would be extremely difficult to codify exactly what constitutes the established payments mechanism and the characteristics of clearing arrangements that would not be permitted under such a policy.

Option 2: Open the payments mechanism to other than depository institutions.

At the other extreme, Congress could open the payments mechanism to all who would join. As indicated, blanket access could weaken the safety and soundness of the financial service industry in that occasions where there would be failure to settle would become more likely.

As an interim step, the payments mechanism could be opened to nondepository organizations that would be willing to meet criteria designed to ensure continued integrity of the system. Such requirements could include provisions for maintaining reserves and provisions that members be audited to determine if they meet criteria for membership or that they obtain performance bonds or insurance that guarantees their ability to settle.

Yet, exclusivity of access to the payment mechanism by depository institutions balances some of the relative disadvantages of such an arrangement under the present legal/regulatory structure that limits the range of activities in which depository institutions can engage. The major sources of revenue of depository institutions in the future will be payments for services provided rather than the spread between the rates at which funds are obtained and those at which they are lent. Opening the payment mechanism to others could substantially affect revenues of depository institutions and, ultimately, because alternative sources of revenue are limited, their ability to remain viable competitors in the marketplace.

Issue 10: What alternatives for regulating interest rates are available to Congress?

In recent years, when market rates have exceeded Federal and State limits, significant quantities of funds have moved from banks, credit unions, and S&L associations to alternative investment opportunities created by new entrants to the financial service industry. These new entrants have relied heavily on advanced telecommunication and information processing technologies to implement their offerings. Constrained interest rates effectively limited the supply of funds to some investments.

Complete deregulation of interest rates would allow service offerings to respond to market forces, the price of services to be held down by competitive pressures, and interest rates to reflect national market conditions. However, to the extent that firms do not recognize the costs their actions impose on others, market forces may not reflect all social priorities.[1] It may be in the public interest, under some circumstances, to modify or constrain the action of market forces on interest rates in order to preserve certain social objectives.

Interest rates, other than for corporate demand deposits, will be essentially decontrolled by 1986 as Regulation Q is phased out. It is possible that this situation could, under some conditions, result in the equivalent of price wars. Financial institutions have been known to raise interest rates to unsupportable levels in attempts to attract deposits. Widespread actions of this type could lead to an excessive number of financial institution failures, and as a result, could seriously destabilize the economy. Selective control of demand deposits and savings account interest rates is likely to cause funds to be drained from depository institutions. Usury laws restrict the supply of credit when interest rates are rising.

Policy Options for Issue 10

Option 1: Federally regulate all interest rates for all financial services and all institutions; preempt State usury laws.

Assuming the Government would set a national rate, this option would create uniformity of interest rates across the Nation. Funds would not be moved from area to area in search of higher returns while they become virtually unavailable to those in need of credit in areas where rates have been capped at below market levels. Interest rate ceilings might be lifted to improve customer access to credit and to attract savings and investments; interest rates might be capped to reduce inflation or economic instability. They might be manipulated to preserve, for example, a housing differential.

On the other hand, the ability to set rates locally helps ensure their responsiveness of credit markets to local needs. This would be lost if the Federal Government were to preempt all regulation of interest rates.

There is no reason that a national rate be set. Rates could be set regionally or set in terms of ranges rather than at specific values. Such strategies could mitigate some of the disadvantages of this alternative, but the difficulty of implementing them operationally should not be underestimated.

Option 2: Completely deregulate interest rates.

In economic theory, at least, this option would allow funds to flow to highest value uses in terms of the costs and benefits included in the calculus. However, if indirect costs and benefits are not recognized, the resulting allocation of resources could be suboptimal. It would increase the availability of credit, but credit could be priced to levels that would effectively deny it to some consumers or cause them to change their way of life as they divert funds to cover its cost.

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[1] Controls on the rates paid on deposits by depository institutions, controlled under the Regulation Q system of ceilings, are being phased out under provisions of the Depository Institutions Deregulation and Monetary Control Act of 1980.

Option 3: Federally cap interest rates only for accounts covered by deposit insurance.

This option would cause money to be withdrawn from depository institutions when market interest rates rise, leaving more consumers exposed to risk because their assets would be in uninsured accounts.

Yet, some may view the reduced return as a cost of security and be willing to incur it. Limiting the return paid customers would reduce the pressure on institutions to make the more risky investments that provide higher yield, thus limiting the exposure of the insurance fund.

Option 4: Allow States to regulate interest rates on all services delivered within the State, whether or not they are delivered by State-chartered institutions.

Under this option, States may try using controlled interest rates to attract businesses. Such tactics could significantly disturb the national money market. On the other hand, market forces complemented by the ease with which information can be rapidly distributed over wide areas would limit the options of the States. Individually, they would be able to selectively cut some rates within a relatively narrow range to support specific policies; but no one State would have the power to establish rates at levels substantially different from the norm. Experience has shown, for example, that States have not been able to artificially depress interest rates on loans made within their jurisdiction when significantly higher rates were permitted elsewhere.

Risk Allocation Issues

Issue 11: What are the alternatives for apportioning risk between financial institutions and their customers and clients?

The purposes of deposit insurance are: 1) to protect the funds of individuals, households, and small businesses against loss when financial institutions fail; and 2) to prevent the widespread economic instability that would result from cascading institutional failures as a result of a sudden loss of public confidence. Deposit insurance covers only traditional demand deposits and savings accounts in commercial banks and equivalent consumer accounts with S&L associations, savings banks, and credit unions.

At present, the Federal Deposit Insurance Corporation (FIDC) protects the depositor's principal up to $100,000. Securities Investor Protection Corp. insurance, on the other hand, guarantees the investor's shares, e.g., against broker's failure to deliver, but not the value of those shares. The "discount window" operated by the Federal Reserve System provides funds to banks that are temporarily unable to meet their reserve requirements and thus also functions as a kind of insurance for the very short term.

As a result of intermediation (consumers shifting their money to other kinds of accounts which give them a higher return), a large proportion of liquid assets and savings are not now covered by insurance. As banks diversify into other activities, they increase their risk of failure. The advantage of being covered by Federal insurance is one incentive for nondepository institutions to buy banks and S&L associations (increasing the tendency toward consolidation of financial resources).

Returns on investment recognize and reward acceptance of risk. Although deposit insurance provides an implied safety net for managers and stockholders of depository institutions, the price of increased efficiency is increased risk, if only because resources are tightly allocated, reserves are reduced, and margins for error are slimmer. The more efficient firms allow less room for error; and, therefore, the expected cost of a mistake increases. With a higher level of competition between financial institutions, the more efficient institutions will survive and some less efficient ones will fail. This is a benefit in economic terms, but because financial institutions play a critical role in modern society, their increased failure rate necessarily touches on the public interest in a way that risks assumed by other kinds of organizations do not. Such failures expose individuals, families, small businesses, and major corporations not covered by deposit insurance to risk of loss of capital or lifetime savings.

Two aspects of risk are involved here: operational risk (failure to settle, an implicit risk that is increased by the speed that new technology contributes to transactions and settlements) and institutional risk (institutional failure because of bad asset management). Operational failures, if they shake the confidence of customers, can greatly increase the risk of institutional failure. This was the problem that deposit insurance was designed to solve. However, deposit insurance itself may encourage firms to take excessive institutional risks by implicitly protecting them from the consequences of bad judgment.

Excessive risk assumed by financial institutions could affect the stability of the economy, if there is ever a series of cascading institutional failures in which each firm's collapse causes the collapse of others. At present, a combination of governmental actions to protect the deposit insurance fund (generally, allowing or arranging a merger between an endangered institution and another stronger one) and ad hoc cooperative actions by large financial institutions to shore up the market, nearly always prevents the spreading of undue detrimental consequences following any threatened or actual financial institution failure. But the speed at which funds are transferred and settlements are made today may make these resolutions much more difficult. Institutional financial crises could spread rapidly.

Many transactions will be time-sensitive. If A fails to pay B, and B is therefore unable to pay C and D, these disruptive events will multiply with great speed. The increased number of daily or hourly transactions, the rapid turnover of assets, the smaller reserves held by an institution relative to the number and dollar value of transactions, and the complex interrelationships between financial institutions will contribute to the sensitivity of the financial system to short-term perturbations. The result will be to increase the sensitivity of institutional equilibrium to even minor perturbations and to decrease the ability to control the secondary effects of disturbances.

Policy Options for Issue 11

Option 1: Retain Federal insurance, as it is now, for traditional depository institutions only.

Continuing the present program is consistent with policy that has provided adequate protection for the great majority of account holders and many holders of stock in financial institutions for over half a century. However, some argue that it gives managers of insured institutions a false sense of security and permits them to take risks they might not take in the absence of the insurance. Thus, insured institutions enjoy some competitive advantage over others in all lines of business in which they engage.

Option 2: Extend Federal insurance to certain accounts that are not held by institutions now eligible for insurance, but only to a specified low level per account or per customer.

An extension of Federal insurance to all accounts that function either as transaction or saving accounts would eliminate a difference between suppliers of financial services that is important to many. Providers that are now insured would lose a factor that gives them something of a competitive advantage over those that cannot offer insured accounts. Vulnerability of the financial service industry arising from the exposure of depositors who have placed funds in uninsured accounts would be reduced.

Limiting the maximum amount of insurance would continue protection for the small depositor that has been provided historically. A larger proportion of the depositors would be exposed to loss. Possibly the propensity of the insuring agencies to find merger partners for distressed institutions would be reduced because the outlay of funds required if an institution were closed would be limited. Comparatively uninsured depositors would tend to exert pressure on financial institutions to avoid unjustified risks and to use sound judgment in making loans and in asset management. Large depositors might also be offered the option of buying insurance for deposits exceeding the limits of Federal insurance.

Option 3: Vary the insurance coverage and cost with risk.

This would permit insured institutions to position themselves in the market in a manner analogous to the way mutual funds characterize themselves. Some funds are growth-oriented while others seek stability and try to generate income for their investors. Depository institutions willing to take higher risks could purchase insurance at a premium price. Alternatively, depositors could elect to receive higher interest rates in return for dealing with an institution that provides only a reduced level of insurance coverage. In this environment, the depositor would have greater options than is now the case. However, the overall exposure of depositors to loss could increase if a significant proportion chose institutions offering lower levels of deposit insurance.

Issue 12: What is necessary to assure an adequate level of financial service to all segments of the population and to protect other basic consumer rights and interests?

In any case, people require some level of financial services in order to carry out their day-to-day activities and participate productively in the economy. They must at a minimum have a way of receiving and making payments, and generally some access to credit. Moreover, one can argue that they need mechanisms through which they can express preferences for specific services from among the alternatives that may be offered.

Because of the restructuring of the industry and its services, some traditional services may disappear, and others will be explicitly priced for the first time, or limited to certain categories of customers. For example, teller service may be limited to those with substantial balances, and merchants may be unwilling to accept or to cash checks. Market forces will tend to cause financial service institutions to encourage higher income customers, who are likely to have discretionary income to save or invest, and to discourage lower income customers with little discretionary income. Some low-profit services will probably be dropped.

Technology is making it possible for government agencies to operate more efficiently with regard to making payments. Direct deposit of all government payments is a long-range objective of the U.S. Department of the Treasury. This would include payments to State and local governments and contractors, and also entitlement payments and Federal employee paychecks. The move to direct deposit may conflict with the wishes of some recipients. Realistically, it is likely that some people will be pressured by government or other employers to accept payment by direct deposit even when they object to doing so.

Float is not a right or entitlement; rather, it is an attribute of a system that requires some period to process payment orders. It is clear, however, that many corporate cash managers, households, and many small businesses have in the past counted on float in managing their incomes. Because of information and communication technology, debits to accounts are in some situations virtually instantaneous, while crediting of deposits made by check must wait until the check is cleared. The customer sees this as an inequity, especially if he or she is charged for overdraft or automatic loan privileges during the lengthened gap. In fact, some financial institutions do abuse this situation. The technological capability to shorten the gap is available, but financial institutions need an economic incentive to apply it.

The right of consumers to full and understandable information about their rights, their risks, and their obligations in using new kinds of financial services may need explicit protection. Subtle legal distinctions between functionally similar services are not necessarily obvious to users, and information provided by financial institutions is not always clear, complete, or in comparable terms. Significant opportunity exists for misleading advertising of financial services.

Policy Options for Issue 12

Option 1: Define minimal services to be provided to consumers.

Congress could require all financial institutions, or those financial institutions choosing to offer certain services (e.g., accounts that function much like traditional demand deposit or savings accounts) to provide certain "lifeline" services, such as teller service or handling of direct deposit Federal payments, without cost to all of those desiring them. Alternatively, it could allow cost-based pricing. Congress could encourage institutions to establish an account that can only be debited electronically as a minimal service for some who misuse checking accounts but would like to benefit from such services as direct deposit. This might, for example, be a condition exacted in return for deposit insurance.

At the same time, Congress may wish to prohibit mandatory direct deposit of payments or to define legal rights to choice of payment mechanisms, at least in some situations.

Because financial information technology confers on the depository institution, which alone has access to the payments system, full control over the timing of debits and credits to accounts, Congress may wish to regulate the exercise of this power to assure that consumers are treated equitably.

Option 2: Define the rights of users to information regarding availability of financial service options.

New or revised legislation may be necessary to define the rights of users to full and comparable information about financial service options and alternatives, and to establish a mechanism for implementing and enforcing these rights. An explicit policy of "informed consent" may be desirable. However, the costs of such regulations should also be considered.

Issue 13: Some changes in the delivery of financial services increase the possibility that the privacy of citizens could be eroded or violated. How can Congress reduce the possibility?

Citizens necessarily accept some diminution of privacy, or potential diminution of privacy, by engaging in any transaction other than exchange of currency. Nevertheless, some aspects of information technology greatly increase the opportunities for and the likelihood of invasion of privacy because data banks are aggregated, shared, and subject to unauthorized access, including access from remote locations.

The aggregation of financial data increases its commercial value, reduces the costs of accessing and using it, and thereby increases the incentive for misuse. Information technology also allows information to be propagated widely and rapidly, so that information harmful to the interests of a citizen (e.g., information about debt or payment behavior, whether this information is correct or incorrect) can affect that citizen's economic relationships in any location. The potential for loss of privacy is, however, not limited to financial or economic matters: to the extent that a citizen's transactions are effected through information technology, his/her location and daily activities and relationships become potentially subject to monitoring and recording. Information systems not related to financial services can involve similar risks.

It is the potential for this invasion of privacy, rather than evidence that it is occurring or has occurred, that concerns some citizens. It is likely that there is increased sharing of financial information and increased use of financial data for multiple purposes (e.g., mailing lists sorted according to information about the people on the lists). Furthermore, most citizens are probably unaware of the extent to which this occurs, of the extent to which law and business practice is able to assume the citizen's consent to this sharing of information as a condition of accepting a service, or of rights and protections associated with various financial services.

Policy Options for Issue 13

Option 1: Strengthen, expand, and explicitly define the citizen's rights to privacy in accepting financial services (and conversely, rights to access and sharing of information by providers of financial and information services).

At present, insofar as a legal base exists for these rights, some of the protective legal provisions apply only to electronic media, and some apply only to paper-based services. Protection from intrusion only by the Federal Government is provided. But some financial services combine these modes, some are in transition between them, and some appear to have no explicit safeguards for the citizen.

While legally defined rights to privacy may be a desirable step in the direction of assuring privacy in using financial services, it may not be a sufficient step. Such legal safeguards should probably not depend for enforcement on victims' complaints. It is in the nature of information and its applications that citizens are unlikely to know when they have been the victims of invasions of their privacy until the damage has been done. Even then, they may be unable to trace unauthorized information or misinformation back to its source, to identify the offender, or to document that the abuse occurred.

Option 2: Institute by law a program of informing citizens about risks to privacy that cannot be avoided in accepting financial services through information technology (a policy of informed consent, to use the model of medical services delivery).

This option at least has the advantage of allowing citizens to decide whether they will accept the risk and of challenging the industry to find ways of reducing those risks. However, it could have the undesired effect of decreasing public acceptance of and confidence in some financial services.

Option 3: Mandate a program of monitoring and enforcing privacy rights.

This option would require additional authority to inspect and monitor financial service institutions, and the allocation of resources for some Federal agency (e.g., the Federal Bureau of Investigation or the Department of the Treasury) to develop enhanced inspection capabilities as well as to implement the program. Furthermore, such an inspection program may increase anxieties about the possibility that the Government itself may violate the privacy of citizens through misuse of financial information about them.

Issue 14: Are additional actions needed to safeguard the integrity of the national payment and transaction systems against risk of disruptions from systems failure, hostile attack, and natural disasters?

Information technology and especially telecommunication links and networks create new vulnerabilities to accidental or deliberate disruptions, and also greatly expand the geographical extent of the impacts. With a highly integrated national economy and financial service industry and increased velocity of money, a local or regional disruption of financial activities rapidly propagates and can cause turmoil throughout the system, even if there is no irretrievable loss of data.

Natural disasters, civil disorders, military attack, or any form of emergency may destroy some communication links or require that others be taken over by emergency management teams. Thieves, saboteurs, political dissidents, terrorists, or others could attack information banks and communication links or threaten to do so, in effect holding hostage the assets of the public.

The direct effects of disruption of financial transactions and payments, of data banks, or of communication links are largely independent of whether the disruption is accidental or deliberate. The long-range effects of creating an attractive target for internal political violence or international terrorism are, however, worthy of special policy concern.

Little is known, at least publicly, about the present level of understanding of the magnitude of the vulnerabilities of financial service systems to systemic failure, external attack, and natural phenomena. Similarly, knowledge about the extent of preparation to deal with them, by either the private or public sectors is limited. Industry representatives have periodically stated that there are enough redundant network capabilities and backup data banks to handle any foreseeable contingencies. At a minimum, the Bank Protection Act could be broadened to cover all financial institutions. The act requires Federal regulatory agencies to establish minimum security standards for banks. The expertise of the Federal Emergency Management Agency (FEMA) could be brought to bear.

Whether or not the security measures taken by financial institutions at present are adequate is not clear, but the issue is clearly one that affects the public interest because the potential impacts of disruption are broad and critical to the national welfare. Actions taken to reduce these vulnerabilities run the risk of:

- negating some of the benefits of information technology; for example, requiring paper-based records, and creating redundant data bases and communication links, which could reduce the savings in time and/or add to the costs of services; and
- increasing opportunities for erosion of privacy.

Policy Options for Issue 14

Option 1: Hold hearings for further consideration of the present and long-term effects of dependence on information and communication technologies on the vulnerability of critical economic and social systems and processes in the context of emergency management, civil defense, and national security.

Option 2: Create a national commission or an interagency task force to gather expert opinions from the financial service industry and from the various fields of emergency management, national security, civil liberties, and the like to assess these risks and recommend appropriate means of reducing or managing them.

Issue 15: What alternatives are available for controlling the risk of theft from or associated with financial service institutions?

Facts about theft (of funds or of information) associated with financial service institutions' use of information technology are obscure. Because public confidence is critical to this industry, it is not in the interests of financial service institutions to call attention to thefts, whether perpetrated within the industry or directed against the industry. Folklore and anecdotal evidence suggests that computer-based thefts are often not immediately discovered, often not solved, and often not prosecuted and that criminals are sometimes informally granted immunity from prosecution in return for revealing how they carried out the theft and for designing ways of preventing it from being done again. Some experts say that information technology has probably reduced the incidence of thefts of funds but greatly increased the average loss from a theft. Clearly, it has made the theft of financial data more attractive, since data are now aggregated into large, easily tapped data banks and since the theft of data need not involve actual removal of documents or other physical media from protected premises. Information technology has also:

- increased Federal responsibility for theft from financial institutions since it more often involves communication links;
- created the need for more sophisticated detection and documentation techniques; and
- transferred risk from institutions (the target of armed bank robbery) to individual customers (whose accounts may be fraudulently debited).

Policy Options for Issue 15

Option 1: Rely on the financial service industry and traditional law enforcement agencies to control crime.

Some believe that theft from financial institutions perpetrated with at least some involvement of computers and telecommunication is increasing despite ongoing efforts of the industry and law enforcement authorities. Further, they do not see this rate of increase abating. If this is true, steps to augment present efforts are required; and even then, this option may not meet the challenge.

On the other hand, the level of consciousness of the problem among financial service providers is increasing. Greater attention is being given to security of advanced systems for delivering financial services. However, it is still too early to know if the efforts will prove adequate.

Option 2: Expand the resources and technological capabilities of Federal enforcement agencies (FBI, Treasury) to deal with computer-related theft and to train and assist local law enforcement agencies.

This option could increase the requirements for auditing and inspection of financial institutions' records. However, this may have the additional side effect of increasing concern over potential erosion of privacy and may also require additional audit trails and paper records, which add to the costs of providing financial services.

Option 3: Increase the penalties against perpetrators and against financial institutions for concealing or failing to report thefts or suspected thefts of funds or data.

Increased penalties for theft may deter some potential perpetrators. Increased penalties for failing to report theft will tend to bring to light data that clarify the magnitude of the problem and encourage the interchange of data needed to deal with it. On the other hand, if the data that surface cause the public to lose confidence in the financial service industry, the net effect could be negative and the stability of the industry threatened. Further, if the data show the success rate of thieves to be high or provide sufficient detail on the techniques that have been used, the end result could be an increase in crimes against financial service institutions.

Option 4: Mandate a national commission to study computer-related crime and identify necessary actions for its control.

Computer-based crime, which is by no means limited to that involving funds or financial services, is on the increase. A national commission to study all aspects of this modern problem would serve many policy needs.

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Chapter 10

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Chapter 10

Future Scenarios for the Financial Service Industry, 1990-95

The future of the financial service industry will be determined by a multiplicity of factors. Any attempt to enumerate them all would be futile and the number of combinations in which they can occur is large. Further, if such enumeration were possible within a reasonable time and commitment of resources, the volume of data generated would be so great that it is doubtful that the results would be useful to anyone concerned with either the operation of the industry or the development of public policy relevant to it.

Scenarios are not predictions of what will happen in the future nor do they necessarily enumerate the most likely of the possible alternatives. Rather, they can be used, as they are in the pages that follow, to illustrate the interplay of variables under specific sets of assumptions. In this application, neither the assumptions on which the scenarios are based or the conclusions drawn are sacrosanct. In fact, the reader is encouraged to suggest alternatives for both and to develop the logic that flows from those that are identified.

Scenarios also serve to bound a problem in that they can be used to indicate what may realistically happen in an extreme but unlikely case. Because they enumerate the countervailing forces that operate in a given situation, scenarios tend to eliminate from consideration some of the simplistic and extreme arguments both the proponents and opponents of a policy may make in support of their respective positions. For example, even a rudimentary analysis of the examples that follow will show that the forces shaping the financial system are such that precipitous changes that could disadvantage significant groups within society in the immediate future are extremely unlikely. However, these same models indicate that some of the changes that may materialize over several years could be detrimental to some, and therefore should command the attention of policymakers.

The scenarios that follow are written from the perspective of an observer of the financial service industry looking back over the 10 years, 1985 to 1995. They are not mutually exclusive, nor are there sufficient parallels between them for the reader to draw conclusions about the effect of changes on the industry in any one variable, such as the rate at which automated systems for delivering financial services are accepted in the market. Rather, each highlights selected areas and suggests one set of outcomes that could result from the confluence of forces described.

Yet, by looking at the issues raised in the several scenarios, the reader should be able to develop an overall sense of the major considerations that will be faced by the financial service industry between now and the middle of the next decade. The goal has been to highlight for the reader the range of variables that will affect the development of the financial service industry in the future and suggest implicitly some of the policy issues that may have to be addressed. These, then, provide a background for considering the policy issues and alternatives that are addressed elsewhere in this report.

The issues of interest from either the operational or the policy point of view vary from scenario to scenario. If, for example, one is concerned with the evolution of the financial service industry in the international arena, the variables that determine the rate of acceptance of new, technology-based services by the American public are of only secondary interest. Conversely, the salient factors that affect policy decisions dealing with the market for consumer financial services have little, if anything, to do with those that determine the

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patterns of activity in international markets for financial services.

The first of the scenarios portrays an extension of the present environment in which there are no major changes in the legal/regulatory structure governing the financial service industry. Included is the implicit assumption that the public will generally accept financial services delivered through applications of advanced information processing and telecommunication technologies. On the one hand, the technologies have been applied to accommodate differences between groups within the population. On the other, some have become less well off because of the postulated changes. On balance, however, the financial service industry and its relationships with its customers have not changed radically from what they are today.

The second scenario is postulated on the premise that there are changes in regulation, but they take place piecemeal. Generally, they are developed in reaction to events in the marketplace that either have to be ratified or to effects which have to be mitigated for one reason or another. For the most part, consumers have rejected or have shown only very limited receptivity to financial services delivered through the application of advanced technologies. However, the contraction in the number of depository institutions has continued as customers move their funds to alternative investment vehicles offered by other types of institutions. The contraction of loanable funds has made it difficult for some to meet their needs for credit.

Systems for delivering financial services internationally are the focus of the third scenario. Attention is drawn to the problems of competition between providers of services in international markets, the movement of foreign providers into American markets and of U.S. providers overseas. World trade has blossomed and national economies have become highly interdependent. The financial service industry worldwide has been called on to provide the required supporting services.

In the fourth scenario, Congress has taken steps to completely overhaul the legal/regulatory framework governing operations of the financial service industry. Most of the regulatory functions of the States have been preempted so that both providers and users of financial services operate in an environment that is uniform nationwide. It is a time of general prosperity and rapid economic growth. The acceptance of technology-based financial service delivery systems has been great, but among the key issues of concern are those relating to personal privacy and the security of financial service systems.

Scenario 1: Extension of Present Trends

The Economy.—Business as usual, continuity and change. A mature economy with an improving position in world trade, but some continuing problems with balance between inflation and stagnation.

Policy.—Deregulation: minimum Federal intervention consistent with maintaining the integrity of national payments and transactions; existing consumer protection regulations (1983) retained; the Zems Bill of 1985 voided most existing Federal provisions regulating services, pricing, and such.

The Scenario.—The financial service industry has been largely deregulated; consumer protection laws passed in the 1970's and 1980's have been retained.

There is continuing experimentation and innovation in information technology with emphasis on network management, development of intelligent media, dispersed delivery of services, and automation of lower value transactions. Driven by the need to control costs, financial institutions have reduced the number of manned branches, and the primary vehicle for delivering financial services is the shared automated facility through which the customer can interact with a number of service providers. Retailers have invested heavily in point-of-sale (POS) equipment and have aggressive programs to encourage customers to make payment by ordering immediate debit of their accounts. This reduces the merchants' costs and reduces the total amount of consumer debt, but it also tends to reduce spontaneous or impulse buying.

Given the multilingual population (Hispanic Americans alone constitute about 12 percent of the population, and another 5 percent are Oriental), automated systems have been designed to provide financial services and information in any one of several languages. The newer voice-response terminals just coming into widespread use are also being supported with multilingual systems.

The United States is a fully "post-industrial" society. Over 60 percent of all jobs are classifed as information handling. Automated equipment is used in virtually all aspects of human activity, including nearly all manufacturing, and the great majority of the population under 55 has received at least a high school education that includes considerable coursework to develop computer literacy. Despite the fairly high levels of unemployment that are blamed at least in part on increased automation, there has never been any strong public resistance to automation, certainly not to automated financial services. A public that enthusiastically embraced Pacman and other video games was not likely to object to automated teller machines (ATMs) and POS terminals.

However, some elderly people (about 12 percent of the population) and the reading-disadvantaged are uncomfortable with the new technology. These are also the people least able to pay for personal service representatives (what used to be called tellers, insurance agents, etc.). Some banks, savings and loans (S&Ls), and others have instituted special teller windows that can be used without charge by these people and by people who only want to draw out government payments made by direct deposit. These windows are popularly known as "charity lines" and many people—especially senior citizens, who are mostly women, therefore refuse to use them.

Although there are many unemployed and an increasing number of retired people, there are also many single people and a great many households with dual incomes. People in these situations are becoming increasingly affluent and well-educated and like to take an active role in asset management. With a mind-boggling number of options in choosing financial services and investment opportunities that can be tailored to their needs or to their special interests, asset management has become a popular hobby. Financial management software proliferates with its own best-seller list, and friends get together with portable terminals to argue the latest rage in investment strategies. Marital counselors and divorce lawyers report that people are as likely to fight over money management as over child custody, even though most couples have "his," "her," and "their" accounts.

Financial service providers offer technology-based services tailored to the needs of various groups within society. For some, the service packages do not differ markedly from those available today. For others, providers negotiate custom-tailored packages of financial services individually with their clients. Among the elements of a package, for example, may be mortgage loans, investment accounts, transaction services, and lines of credit. The terms of each of the services in a package reflect the priorities of the clientele. For example, an individual may be willing to accept a lower rate on a line of credit in exchange for a lower one on a money market fund.

The proliferation of accounts and relationships with financial institutions is in fact striking. Even though financial supermarkets constantly stress the advantages of "one-stop shopping," customer loyalty to one institution is rare, and customers shift funds rapidly from one location to another as new gimmicks in financial services are touted. One defensive strategy is the bundling of services, especially if the combination can be made to include an account that falls under Federal deposit insurance.

About 20 major remote banking systems are available nationwide. A number of smaller remote financial services exist but are only marginally profitable at best. Most combine financial services with a variety of information and entertainment services. Among the dominant institutions in this field are major long-distance telecommunication carriers, newspaper and book publishers, and entertainment companies. Financial services are delivered using conventional telephone, direct broadcast satellite, and two-way television cable.

The newnions ("new unions," representing professional, administrative, and office workers) have in many companies negotiated programs in which employees have the option of being paid daily with a credit to an account held by the employer. Employees can access these accounts through debit cards or in some cases paper drafts (checks), which are processed through a cooperating financial institution where the employer maintains a zero-balance account to cover debits as they are presented.

Because financial markets are heavily automated and information is rapidly distributed, both the issuers and buyers of debt and equity securities operate in a national and, in some cases, an international arena. Funds flow to those areas where they can earn the best return at an appropriate level of risk. Regions with sparse or declining populations, regions with obsolete industry and old infrastructure, communities that were left isolated when a new highway was built, old farm market centers and rail crossroads that no longer have rail service, find it much more difficult to attract new capital. Rural banks can no longer afford to make a loan to carry the struggling family farm until the crop comes in. The Federal Government is under increasing pressure to provide new social programs to help these communities.

Relatively few large retailers, security brokers and dealers, insurance companies, and oil distributors have established nationwide distribution systems for financial services heavily based on existing customer relationships, telecommunications, and information-processing technology. On the other hand, because some legislation restricting interstate operations is still in force, no commercial bank is among the leading financial supermarkets. Some commercial banks use networks to deliver services nationwide in competition with the giants, but laws in some States prevent them from accepting deposits, which puts them at a significant disadvantage. Mergers of several of the larger regional S&L operations have resulted in two nationwide S&Ls being among the top 20 financial service giants. Although credit unions operated by the newnions serve professional and office workers nationwide, charter restrictions keep them from becoming financial supermarkets.

Many small financial institutions are still doing well. They depend on shared networks and access to wholesale services ranging from data processing to transactions processing to compensate for their small size. Their wholesale suppliers sometimes compete with them for a retail market, and there are increasing complaints from the small firms about rising costs of wholesale services and networks. Problems in gaining access to shared networks is probably one major reason that there are fewer new entrants into the financial service sector each year.

Insurance companies have nearly all changed their marketing and distribution processes; generally those functions are handled by other institutions.

The U.S. Agency for Family Services has asked Congress for authority to monitor financial accounts to identify and track missing or delinquent parents owing child support.

One State has passed a law requiring financial institutions to make automatic payment of public housing rents from the accounts of tenants receiving State or Federal assistance checks.

The 1994 Los Angeles earthquake disrupted all communication with that region for 3 days as surviving communications channels were preempted by emergency management teams. The Financial Services Association estimates that the total cost to investors, financial institutions, and others of that interruption was approximately $4.8 billion.

In spite of these problems, and the slow but gradual decline in the number of financial service institutions, both large and small financial service institutions are generally healthy and generally responsive to the needs of the communities they serve, as well as to the needs of the Nation. Even though there are clearly some barriers to entry, a firm usually develops to respond to the unmet needs of a local population. Mortgages are still available from depository institutions in most communities, but most are sold in secondary markets to insurance companies and retirement funds that use them to balance their long-term liabilities with long-term assets. However, the dynamic of the financial marketplace has caused the long-term, fixed-rate mortgage to all but disappear. Young people and people on fixed incomes are often reluctant to undertake an obligation that has changeable dimensions. Home ownership is tending to decline. Developers hesitate to begin projects that they may not be able to sell immediately if interest rates go up just when the development is completed.

Nevertheless, the financial service industry, now a combination of comparatively small specialized service providers and giant financial supermarkets, is using technology to provide an efficient national payments and transactions system and to facilitate redistribution of financial resources, the primary functions of the financial service industry.

Statistics:

Banks: 13,800; decline in decade—8 percent.
Thrifts: 4,400; decline in decade—12 percent.
Automated transactions: 20 percent by number, 87.5 percent by value.
ATMs: 48,000.
Home banking systems: 20, used primarily by corporations.
POS terminals: proliferating; deployed by 49 percent of depository institutions.
Direct deposits: 64 percent of Federal payments.
Percent of households with no depository account: 12 percent.
Technology: growing use of debit cards, voice-activated ATMs.
Outstanding issues: privacy, systems security.

Scenario 2: Piecemeal Regulation

The Economy.—Gradual recovery from recession; continuing large Federal deficits dampen economic activity, keep interest rates high, and cause a continuing high rate of unemployment.

Policy.—No thorough revision of regulation. Piecemeal changes occur, generally to recognize structural changes that have already occurred in the industry. Many legal/regulatory provisions have merely lapsed because technology has provided a way around the restrictions.

The Scenario.—The events of the past decade have resulted in a hodgepodge of laws, amendments, and regulations, as Federal policymakers and regulators tried to keep up with rapid changes in the financial service industry that constantly made old laws and regulations ineffective. Only a few legal specialists can now sort out what rules apply to which services. A great many provisions today are cumbersome without being effective.

While Federal laws tend to recognize changes that have occurred and therefore are more permissive than in the past, States still play a dominant role in regulation of financial services, and their regulatory strategies vary widely. Some States, for example, still forbid branch banking; others require that any network must be open to any financial institution that wants to participate. Financial service institutions have tended to migrate toward States with permissive laws. A great many local depository institutions have been bought up by larger organizations. Loopholes in Federal laws allowed banks to be converted into "nonbanks."

In some States, both banks and S&L associations have become virtually financial service supermarkets; in other States, depository institutions are limited to a few traditional services and may neither own, nor be owned by, any other kind of institution. Neither extreme seems to be ideal for banks. There have been a number of messy bank failures, where banks have participated in a broad range of new ventures and taken some questionable risks. The Federal Deposit Insurance Corporation (FDIC), which is now burdened with insuring quasi-deposits held by a variety of institutions that include insurance companies, investment brokers, and retailers, is stretched to the utmost in trying to salvage as many of these institutions as possible in order to prevent further drain on the insurance funds. Usually that salvage is done through mergers, and the number of depository institutions is slowly but steadily shrinking.

Many thrift institutions have been bought up by, or been allowed to merge with, other institutions. Some of these have essentially abrogated any real commitment to housing finance and have become much like other general-purpose, widely diversified, financial institutions.

In States where banks are strictly limited and protected as having a unique role, they have seen their resources dwindle as customers remove funds to invest them through institutions that can operate across State lines. States that adopted this strategy generally did so in order to protect local banks, especially farm-oriented banks, but they now find that the banks have little money to lend. S&L associations in the same States are generally regulated with a view to preserving their commitment to housing finance, but they are also having trouble attracting money. Federal depository institutions have widely diversified, and some of the largest have almost become financial supermarkets.

There is, overall, less competition within the industry, as the number of viable institutions slowly shrinks. Competition is declining in other ways, as well. After the period of bold experimentation, when there was rapid proliferation of new kinds of accounts and all kinds of financial services were constantly elaborated and modified, things began to settle down in the mid-1980's. It became apparent that most customers were satisfied with a few more-or-less-traditional services and had neither the time nor the desire to try to sort out the scores of services with fancy names, exaggerated claims, and marginal differences that almost no one could understand. Most people have all they can do to stretch their paychecks from one payday to the next and realistically have little hope of using their limited cash to make more money.

As a result, the growth in financial services has been much slower than some experts predicted a decade ago. The information technology used for financial services was very quickly standardized after the big institutions had made their basic hardware decisions, and there has been relatively little innovation in the last few years.

Large-value transactions were easy to automate, but lower value transactions—the 82 percent of transactions that together account for only about 12 percent of all the dollars changing hands—have proven to be much more difficult. Consumers have not accepted direct debit from the point of sale and home banking and information services as expected. As a result, the paper burden has not been lightened as much as the financial service industry hoped it would be. Another factor slowing the rate of innovation in financial services has been the great differences between State laws and regulations that keep large institutions from developing markets of the breadth necessary for supporting new service offerings. A sluggish economy has reduced the amount of money people are able to save or invest and, hence, their demand for new services.

Part of the problem was unanticipated customer resistance to a perceived increase in risk. As banks and thrift institutions broadened their activities and began to expose themselves to more risky ventures and fiercer competition, there were many near-failures. Most of these were prevented, although at the cost of a heavy drain on FDIC, but a very few highly visible institutional collapses, coupled with several highly publicized electronic thefts, were enough to shake public confidence. Some banks and S&Ls had to close their doors abruptly because they had used poor judgment, overextending themselves when a rapid turnover of assets, twice-daily settlements, very thin reserves, and dwindling corporate deposits made them very vulnerable.

Many people were disgruntled because they saw—usually in advertisements—people with a little more discretionary income collecting high interest rates and multiplying their assets by using glamorous new services, while they themselves seemed to be losing out on the opportunities and paying for services they once thought of as free.

Many people are in fact put off by the kinds of records they get from computer-based transactions of any kind. They are afraid that they will not recognize errors, or know how to get them corrected. The whole process seems cold and faceless, and they are afraid of being victimized. Most people over 50 have never felt comfortable with electronic information technologies. They are afraid of looking silly if they make mistakes or if they challenge the computer's mistakes. All in all, it is more comfortable to deal with a friendly face at the teller's window or the familiar insurance man with his thick black book.

One mark of growing disaffection with financial institutions is an increasing number of consumer lawsuits, something almost unheard of a few years ago.

Local banks play on these sentiments by emphasizing their hometown image, stressing the comfort of friendly personal service, and being community boosters by sponsoring local sports teams and advertising their sympathy for local small businessmen and farmers. They rely more and more on small savers and old customers. Large corporations find financial service institutions that can help them manage their funds more profitably, and young affluent customers put their funds in money market accounts with checking privileges.

Home banking and home information services are limited to the largest metropolitan areas; despite their name, they are almost exclusively used by large companies. Time-measured local communication costs, which have risen steadily, make them unattractive for most households. These services might have caught on if women had continued to enter the work force at the rapid rate of the 1970's and early 1980's, but continuing high unemployment has defeated such hopes, and many homemakers have plenty of time to pay their bills the old-fashioned way.

POS terminals are another technology that failed to spread rapidly despite a very promising start. One problem was the failure to resolve the technical problem of dealing with three different technologies—magnetic stripe, uniform product codes, and optical scanners. With plenty of fairly well-educated people looking for work, there was less incentive to automate the retail sales sector, and all but the very large retail corporations hung back waiting to see how the technology would shake down. Besides, customers seem to prefer the more familiar, slower payment process of charge accounts, credit cards, or checks. Psychologically, they probably feel that it lets them hold on to their money a little longer and gives them a little bit of protection against merchants who sell inferior goods or make mistakes in their charge accounts.

There is also continual disquiet about pressure—whether real or perceived—from employers and from governments to agree to direct deposit of paychecks, Social Security checks, assistance checks, and the like. Many people see it as a great convenience, and safer than having checks left in mailboxes or carrying them home from the office. But many people don't want their boss—or "Big Brother"—knowing where they bank, or don't want to bank at all, because they distrust large institutions. Employers who want to save money on their paperwork are inclined to suspect that such employees are trying to evade taxes or child support payments or are in the country illegally. Nevertheless, direct deposit is not growing as much as expected, and many large organizations have stopped trying to push it.

The securities market has not grown significantly in the last 6 years. This is generally attributed to the maturing of the economy, the generally declining size of business enterprises, and the aging of the society. There has been very low growth in the gross national product (GNP) for most of this period, and America's position in world trade has generally declined. Securities increasingly tend to be held by pension funds, insurance companies, and other large institutional investors, and there is much less marketing to individuals than there was a decade ago.

The outstanding characteristic of the financial service industry today is, in short, that its growth is slow and that it is troubled with more turbulence and uncertainty. The outstanding characteristic of the financial service market today is that it is bifurcated. Large-value transactions are automated completely, and large institutional investors—big corporations, pension funds, insurance companies—enjoy options that cannot be profitably extended to the average-income person. Large firms offer a variety of services to institutional users nationwide and smaller institutions are strongly oriented toward local and regional markets and individual or small business customers. With the continuing dispersion and deconcentration of people and business over the last 20 years, there is plenty of room for small, community-oriented institutions, but the large institutions dominate the economy and the general long-range trend seems to be toward greater consolidation of financial resources.

Statistics:

Banks: 13,000; decline in decade—13 percent.
Thrifts: 4,050; decline in decade—19 percent.
Broker/dealers: 4,000; decline in decade—20 percent.
Transactions automated: 18 percent by number, 88 percent by value (1983 = 15 percent, 85 percent).
ATMs: 37,000.
Home banking systems: 6, in very large metropolitan areas.
POS terminals: deployed by 9 percent of depository institutions.
Direct deposit: 46 percent of Federal payments.
Percent of households with no depository accounts: 16 percent.
Technology: innovation slowed or stopped, service options declining.
Outstanding problems: depository institution failures; consumer litigation.

Scenario 3: The Global Financial Services Industry

The Economy.—Accelerated growth in world trade, with an increasing division of labor worldwide. The United States has a strong position in high-technology products—especially biotechnology, new-generation computers, specialty chemicals—and in services and agricultural commodities.

Policy.—Recognition that efficient financial service is a cornerstone of international trade;

cooperation with other nations to regularize and encourage an orderly world market.

The Scenario.—The volume of world trade continues to increase. Both industrialized and industrializing nations compete for raw materials, energy, and markets. Many Third World countries, especially around the Pacific rim, have become increasingly industrialized, and other small countries in South America and the Middle East are also making progress. Trade among Third World countries continues to increase. Heavy industry has tended to move from the older advanced nations to take advantage of lower costs for land, labor, raw materials, and regulatory compliance in developing countries. Bulk chemical production for international markets, for example, has largely been taken over by Third World countries. A global division of labor is evolving, and it may eventually narrow the gap between rich and poor countries by providing a viable niche for everyone, as Herman Kahn predicted 20 years ago.

The United States has increased its share in world trade, with nearly all of the growth in export of services; high-technology (biotechnology, intelligent systems, specialty chemicals, photovoltaics); and agricultural and forest products. Services now account for the largest share of U.S. exports.

Multinational corporations (of which only about one-third of the 500 largest are now predominantly American-owned) play a major role in all countries. Meeting their needs for financial services has significantly contributed to a standardization of financial services and associated technology in the industrialized nations. The advanced countries all have a well-developed, highly integrated, financial service industry, with heavy dependence on information technologies. The newly industrialized nations are following the same path. Poor countries that lack the capital and the communications infrastructure to automate their transactions systems find that this is a significant disadvantage in building indigenous industry and in trying to enter world trade. Since most countries have a state-owned central bank, their governments would have to bear the costs of building or modernizing their financial service infrastructure, and this has tended to add to the burden of debt of Third World countries.

U.S. corporations are heavily committed to international operations and have become heavy users of automated cash management services that show treasurers the status of financial resources worldwide and facilitate the movement of funds across national boundaries to match requirements for funds with availability of funds.

In most countries, trading and financial activities now operate on a 24-hour basis. Many international information services use satellite communications. Traditional communications links, such as telephone and telegraph cables, are highly vulnerable to the political instability, terrorism, and local wars that have been the curse of the last two decades, as well as to governmental restrictions on the transborder flow of data. As it is, there are continuing international disputes over freedom of financial data. With international trade and transactions critical to the economic welfare of all nations and an increasingly dominant factor in every national economy, financial data is a valuable commodity. That fact continually tempts national governments and international thieves to try to control, capture, or manipulate it to their own advantage.

The reluctance of the United States, in the 1980's, to cooperate with other countries in setting up mutually acceptable safeguards for the transborder flow of data resulted in some diplomatic problems and a regrettable loss of national prestige as well as some damage to U.S. trade positions. The major holdout among Western nations against international agreements guaranteeing transborder data flow has, however, been Switzerland. As an ironic result of clinging to its sacrosanct privacy laws, Switzerland has lost much of its preeminence in international banking, although it remains a haven for secret bank accounts.

All of this means that national economies, national markets, national currencies, and national transactions systems are closely tied to one another. In most situations, the continual adjustment and settlement between currencies and within world markets seems to provide additional stability. But any perturbation affecting one national currency or commodities market immediately affects others, and the failure of a major bank anywhere in the world has repercussions in nearly every country. Occasional excursions in markets reveal this vulnerability to instability under sudden shocks. This occurred several times during the late 1980's when Third World countries defaulted on large debts.

In these instances, governments and financial institutions were able to act quickly and cooperatively to dampen the reactions, in large part through using the highly developed information systems and financial networks between countries. Since then, these networks have been used more systematically to monitor and control international debt exposures, debt management, and repayment schedules. But setting up mechanisms to allow this to happen has entailed complex diplomatic negotiations and an elaborate structure of international agreements that was hard for some countries, such as the United States, to accept.

Because of the large volume of international transactions and the velocity with which funds move between countries, national monetary policies are much less effective, and most countries, certainly those that are not centrally planned economies, have much less control over the stock of money in the country. In the United States, there are now many foreign-owned financial institutions; in fact, most of the largest financial institutions, including major banks, have some foreign ownership. Many U.S. banks also have branches or affiliates in other countries.

Many experts, both within and outside of the government, worry about the effect of these developments and see them as an erosion of national control over U.S. domestic economy and external relationships. Through transnational investments and mergers, most of the world's large financial institutions have become multinational corporations. Many of them have far more financial resources than most national governments, and inevitably this gives them great political power. If they ever acted together, they would very nearly constitute a world government.

The realization of the close relationship between multinational corporations, especially financial institutions, and national governments has made these institutions a prime target for political dissidents, guerrilla movements, displaced populations, and terrorists of all kinds. The British-owned Barclay Bank in New York was bombed by the Irish Republican Army in 1986, with 34 fatalities and 109 serious injuries. Overseas protection for facilities, information banks, communications links, satellite ground stations, and especially for personnel is costly. Hostile actions against Americans and American-owned facilities have several times involved the United States in dangerous political situations in other countries. In 1992, 10 Americans were held hostage by rebel forces in the Union of South Africa for 12 days. A year later a Mexican mob protesting the treatment of illegal immigrants crossing the U.S. border attacked a U.S. bank in Mexico City. The administration, which had been elected with the strong support of the Black and Hispanic Political Coalition, was nearly torn apart in its efforts to deal with these situations.

Despite these severe problems, there can be little doubt that the United States' full participation in world trade demands U.S. cooperation with and leadership in the continuing development of a worldwide financial service industry. Further, in the development and sales of advanced financial information systems, the United States is rivaled only by France, the originator of the smart card, which is now revolutionizing consumer services, and can potentially revolutionize all forms of recordkeeping throughout the economy and society. The American financial service industry accounts for a significant share of the export of services, the fastest growing sector of U.S. international trade for over a decade, and supplies most of the financial services needs of many small countries.

The growth and integration of the world economy in the long run may well be the most significant force for world peace. It could be the source and wellspring of the gradual development of a world political order based not on unenforced charters or on military power, but on the economic self-interests of the nations of the world.

Statistics:

Banks: 15,750; increase in decade—5 percent.
Thrifts: 5,100; increase in decade—2 percent.
Percent of U.S. financial institutions with some foreign ownership: 13 percent.
Percent of U.S. financial institutions with international branches or affiliates: 17 percent.
Automated transactions: 35 percent by number, 91 percent by value.
Direct deposit (international payments): 97 percent of Federal payments.
Outstanding issues: control of terrorism, monitoring and control of Third World debts.

Scenario 4: Prosperity and Innovation

The Economy.—Booming prosperity. The United States has a commanding lead in several high-technology industries and a strong role in international trade. An era of innovation and economic growth is well under way.

Policy.—Regulation by objective, aimed at preserving competitiveness in the financial services sector while reducing risks to provider institutions and to consumers.

The Scenario.—Rapid advancements in the biological sciences are spawning new industries, just as advancements in chemistry did following World War II. Computer-assisted design and manufacturing (CAD/CAM) and industrial robotics have significantly lowered manufacturing costs and have automated batch or custom manufacturing. Continued strong growth in the services sector, especially in export markets, has kept unemployment at reasonably low levels in spite of the new wave of automation.

Recognizing that a strong national economy demands efficiency and reliability in nationwide transactions, and also demands that all regions and communities participate productively in that national economy, Congress took decisive steps in 1985 to revamp laws and regulations pertaining to financial services. Most aspects of financial service delivery were decisively preempted to prevent State laws from distorting the legal and institutional infrastructure necessary for an efficient national payments system. Prohibitions on interstate banking were removed, but banks were allowed to engage in diversified financial services only by carefully segregating them from traditional depository-lending activities.

Only certain kinds of demand accounts qualify for Federal depository insurance, and they are subject to special regulatory supervision regardless of the institution offering the service. Other kinds of accounts are carefully distinguished from insured accounts by time-related and other requirements and must clearly inform users of the differences. All financial service regulation is focused on the nature of the service and its risks and returns rather than on the nature of the institution providing the service or the mechanisms through which it is delivered. The exception to this rule is that institutions providing certain basic "lifeline" services or committing specified proportions of their resources to a few specified social priorities (e.g., education loans, housing development, ecological protection, small entrepreneurship) are granted incentives sufficient for encouraging those activities.

Administration and enforcement of Federal financial service laws and regulations has been largely centralized and rationalized under a special agency, the Federal Investment and Savings Trustee—popularly known, inevitably, as "Tight FIST."

Information technologies have allowed all economic sectors to improve their productivity, to operate more efficiently, and to be decentralized, yet well-coordinated. The proliferation of information technologies and systems has been comparable to the spread of electrification in the 1930's and 1940's. The thrust in financial information technology has been toward automation of lower value transactions and the development of intelligent media—the smart card and its descendants.

ATMs are now being replaced by automated resource control centers (ARCCs) that not only dispense currency but automatically transfer funds between accounts. Most stores, gas stations, and the like, have POS terminals, although people do a great deal of their shopping through their home computers. Merchants disagree about whether video shoppers or onsite shoppers are more likely to make impulse purchases; some have concluded that it is the less affluent shoppers that come to the store (the poor, the elderly, and those just browsing for entertainment), and they no longer make much of a special effort to attract them. This hurts the very small shops that cannot afford to be on television and that depend on passers-by drawn to the malls by larger stores.

With computers almost as common as the telephone and with communication costs low, home banking is common. There are many licensed brokers and general-purpose financial advisors fiercely competing for customers. The brokers work on commission; the financial advisors charge by the hour and are supposed to be more disinterested. But there are some shoddy operators in both groups in spite of the watchdogging of both the consumer interest groups and FIST. Some institutions and some brokers offer special-interest asset management programs that cater to the customer's special interests or pet causes—investment in such things as the arts, community self-sufficiency projects, alternative energy development, or opportunities for new markets. These programs also provide opportunities for conflicts of interests, if not downright scams, although most of them are probably useful and effective.

Businesses have established powerful telecommunication networks that are used for a variety of purposes. Some groups of firms where the members both buy from and sell to the others have established procedures for electronically settling accounts between and among themselves with little if any involvement of the financial service industry. Interest is paid on credit balances in accounts receivable. Members of the clearing community have generally agreed to settle a credit balance in an account receivable in good funds on demand. Only when there is a cash settlement of either a receivable or payable is the conventional payment mechanism operated by the financial service industry used.

Similarly, some have found off-market trading of securities to be in their interest. Electronic bulletin boards are used by both businesses and individuals to post bid or ask prices for securities, and the transaction is executed by the principals without the involvement of a broker. Electronic messages bearing the computer signatures of both buyer and seller are sent to the transfer agent and securities depository instructing them to make the appropriate entries in their records.

Protection of customer privacy and security of all elements of the financial service delivery system have been major thrusts of congressional action in recent years, but these two problems are not completely solved. Federal law prohibits the use of any financial data for any purpose not specifically approved of by the subject of the information. These are known as informed consent laws, but in practice these laws are difficult to enforce because it is hard for victims to detect and prove secondary use of data from a given source. Federal laws also specifically forbid government agencies to have access to such data for other than narrowly defined purposes (i.e., tax levy), but civil libertarians point out that this is no protection at all—he who makes a law can violate it—and indeed there are frequently proposals in Congress to allow access to financial data for socially useful purposes such as crime detection and military intelligence.

Security is another important problem for several reasons. Because the financial service system is so highly networked nationwide, the potential gain from a successful theft is almost unlimited. Also, because of the national networking, any disruption or violation of the integrity of the payments system, whether it stems from natural, technological, or human causes and whether it is deliberate or accidental, can have major effects on the whole economy. And because financial transactions are so central to the economy, and economic stability is central to national security, financial information systems become a target for all of those, inside or outside the country, who have reason to attack the U.S. Government.

The Federal Bureau of Investigation has greatly expanded its capability to control computer-based crime and has elaborate related training programs for State and local officials. However, with computers and telecommunications so firmly linked, almost all computer-based crime, especially directed at financial services, is now considered a Federal responsibility (for both legal and technological reasons).

Protection of financial information and transaction mechanisms in the event of natural disasters or military attack is also a Federal responsibility. The Federal Government has developed standards and requirements for both backup systems and redundant data banks, but the industry protests that the costs are excessively burdensome, many technical experts question the adequacy of the standards, and civil libertarians fear that redundant records provide another opportunity for violations of privacy.

Most financial services are marketed nationwide. A large volume of transactions appears necessary for assuring an institution's viability in this fiercely competitive market. The Federal laws requiring financial institutions to direct a percentage of resource investment to certain high-priority social programs are a continuing political issue. There is constant dispute between those who want to add new social priorities to the list of preferred investments (which carry definite tax advantages) and those who see each new addition as a further step toward a centrally planned economy.

Despite these problems, there is general agreement that the national payments and transaction system is healthy and efficient and plays a major role in the general prosperity and in America's strong position in world trade.

Statistics:

Banks: 16,500; increase in decade—10 percent.
Thrifts: 5,200; increase in decade—4 percent.
Automated transactions: 35 percent by number, 91 percent by value.
ATMs and ARCCs: 77,000.
Home banking systems: 70, broadly dispersed, wide coverage.
POS terminals: deployed by 63 percent of depository institutions.
Direct deposit: 91 percent of Federal payments.
Percent of households without depository accounts: 7 percent.
Technology: development of intelligent media, ATMs that automatically transfer funds between accounts.
Issues: requirements for preferred social investments, growing computer-based theft.

Appendix

Appendix

Glossary of Terms

This appendix provides summary definitions of financial service products discussed at various points in this report. The first section contains a listing of financial service products grouped as:

Asset and Liability Products
Transaction Products (Paper-Based)
Transaction Products (Electronic-Based)
Information Systems

The second section contains the definition of each of the items listed in the first. The items in the second section are listed in accordance with the numbering of the items in the first.

SOURCE: "The Impacts of Information Processing and Communication Technology on the Creation and Delivery of Wholesale Financial Services," ICS Group, Inc., 1983.

Financial Products and Services

Asset and Liability Products

1. Syndicated Loans
2. Project Finance
3. Lease Receivable Finance
4. Indirect Loan Funding
5. Revolving Line of Credit
6. Offshore-Based Lending
7. Banker's Acceptances
8. Trust Receipt Financing
9. Depository Financial Institution Products
    - a. Direct Deposit
    - b. Check Access Certificate of Deposit
    - c. IRA, Keogh
    - d. Eurodollars
    - e. Imprest or Sweep Account
    - f. Single Premium Deferred Annuities (SPDA)
10. Margin Accounts
11. Market Making
12. Leveraged Leases
13. Retail Banking
14. Middle and Institutional Market Lending
15. Repurchase Agreements
16. Money Market Securities
17. Other Investment Funds
    - a. Money Market Fund
    - b. Real Estate
    - c. Liquidity
    - d. Growth
    - e. Municipal
18. Mortgage Lending
19. CSVLI Loans
20. Real Property Equities
21. Insurance Premium Financing
22. Actuarial Accruals
23. Annuities

Transaction Products (Paper-Based)

24. Cash Processing
25. Payroll
26. Money Orders/Traveler's Checks
27. Mortgage Servicing
28. Back-End Processing
    - a. Installment Loan Servicing
    - b. Mortgage Loan Servicing
    - c. Commercial Loan Servicing
    - d. Demand Deposit Accounting
    - e. Savings Deposit Accounting
    - f. Term Deposit Accounting
    - g. General Ledger Control
    - h. Collateral Control
    - i. Cash Control
    - j. Trust Accounting
    - k. Item Processing
29. Wholesale/Retail Lockbox
30. Check Guarantee/Authorization
31. Securities Safekeeping
32. Personal Trust
33. Escrow Accounting
34. Note Collection
35. Mortgage Banking
36. Collection Service (Brokerage)
37. Private Placement
38. Equity Brokerage
39. Public Offering
40. Relocation Management
41. Real Estate Brokerage
42. Securities Settlement
43. Annuities

Transaction Products (Electronic-Based)

44. Data Base Access
45. Branch Automation
    - a. Platform Automation

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- b. ATMs
- c. Teller Terminals

46. Settlement and Clearing
    - a. Settlement
    - b. Clearing
47. Automated Clearing House/Electronic Clearing House
48. Wire Transfer (Domestic and International)
49. Cash Management
    - a. Depository Transfer Check
    - b. Concentration Accounting
    - c. Automated Investment Accounts
    - d. Cash Forecasting
50. Business Banking Products
    - a. Account Reconciliation
    - b. Account Consolidation
    - c. Balance Availability Reporting
    - d. Balance Concentration/Sweep
    - e. Automatic Customer Billing
    - f. Deposit Reconciliation
    - g. Account Payable Check Writing
51. Point-of-Sale Systems
52. Home Banking
53. ATM Systems
54. Commingled Investment Pools
55. Direct Deposit
56. Funds Movement and Inquiry
57. International Banking Products
    - a. Letters of Credit
    - b. Credit Inquiry
    - c. Foreign Exchange
    - d. Draft Collection
    - e. Syndication
    - f. Dollar Connection
58. Stock Transfer
59. Commercial Paper
60. Options/Futures
61. Equity Brokerage
62. Index Funds Brokerage
63. Bond Brokerage
64. Fund Management
65. Debit Cards
66. Securities Settlement
67. Discount Brokerage
68. Securities Lending
69. Certificates of Deposit Brokerage
    - a. Straight
    - b. Strip
70. Insurance Services Account

Information Services

71. Cash Requirements Forecasting
72. Working Capital and Cash Flow Analysis
73. Investment Return Optimization Analysis
74. Consumer Financial Analysis
75. Business Financial Analysis
76. Debt Issue Rating and Quotation Services
77. Credit Reporting Agencies

Glossary of Terms: Financial Products and Services

Asset and Liability Products

Asset and liability products are those generic products that impact the balance sheets of financial institutions. Asset products are generally loans, while liability products are depository in nature.

1. **Syndicated Loans**—Loans involving multiple banks and nondepository financial institutions in cases where the overall credit involved is in excess of each bank's comfort or legal lending limit. One bank usually acts as agent for the others, thereby earning a fee for its efforts (and therefore becoming a transaction product provider).
2. **Project Finance**—Similar to syndicated loans (in fact, most are syndicated), project finance involves very specialized lending to major governments and their captive industries.
3. **Lease Receivable Finance**—Loans made to lessors by insurance companies, pension funds, depository financial institutions (DFIs), nondepository financial institutions (NDFIs), secured by retail leases or loans that the lessors have made to lessees. The lessor's note from the bank is secured by the paper, not the leased asset.
4. **Indirect Loan Funding**—Involves a bank or NDFI acting in a transparent fashion for another lender, whereby the first provides the funding source while the second generates the marketing and approval process. Two common types of indirect funding are: 1) correspondent bank overlines, where a bank automatically participates in its correspondent bank's credit packages over a preset limit; and 2) bulk paper purchases, wherein the loan generator (auto dealer, retailer, lessor) creates paper through the normal course of its business and periodically sells the paper and control of the collateral to a lender (e.g., bank, consumer finance company).
5. **Revolving Line of Credit**—Generally a consumer product that enables an individual to borrow and repay loans under a predetermined and approved limit. this product is often

wholesaled by banks to NDFIs and retailed with the latters' other product lines (money market account, annuity, debit card).

6. **Offshore-Based Lending**—Certain tax benefits exist that accrue to domestic borrowers who use offshore lending offices of U.S. banks to conduct business. Organizations provide this service for their correspondents that are too small to establish such facilities themselves.
7. **Banker's Acceptance**—These obligations of the bank (guaranteed payment under letters of credit) can be either assets or liabilities or both, depending on whether the bank is discounting them to the public against its guarantee of payment.
8. **Trust Receipt Financing**—Generally provided by large commercial lenders to banks and the public to enable them to finance inventory—either finished or raw.
9. **Depository Financial Institution Products:**
   a. **Direct Deposit**—The process whereby a check's issuer delivers the check directly to the payee's bank for credit to his or her account. The term is often used to refer to the Federal Government's direct deposit program for Social Security checks. It is also used for military and civilian salary payments, Civil Service and Railroad Retirement annuity payments, and Veterans Administration compensation and pension payments.
   b. **Check Access Certificate of Deposit**—A bundled product that includes allowing the consumer to write checks against a line of credit secured by a term deposit in a bank.
   c. **IRA/Keogh**—A tax deferment product offered not only by banks (where it is a term deposit product), but also by NDFIs, such as insurance underwriters, securities brokers, consumer finance companies, mortgage bankers, and others. These offerors provide trustee services under IRA and Keogh plans, thereby playing in the transaction services arena.
      1) **IRAs**—A retirement savings program for individuals to which yearly tax-deductible contributions up to a specified limit can be made. The amounts contributed are not taxed until withdrawal. Withdrawal is not permitted without penalty until the individual reaches age 59½.
      2) **Keogh Plan**—A retirement plan for self-employed persons and their employees to which yearly tax-deductible contributions up to a specified limit can be made.
   d. **Eurodollars**—Dollar-denominated deposits in foreign banking offices. Such services are provided by correspondents to serve the overseas finance and deposit needs of the originating institution's customers.
   e. **Imprest or Sweep Account**—Depository account with a targeted maximum balance above which funds are swept either to investments or to a concentration account, and central accounts into which funds deposited with various regional institutions are collected and then either used to meet payment obligations or for investment.
   f. **Single-Premium Deferred Annuities (SPDA)**—Products designed to provide a future pay-out of deposits based on an actuarial formula. Currently, only insurance underwriters are empowered to offer most types of annuities. Such annuities have some form of tax avoidance characteristics.
10. **Margin Accounts**—Margin accounts enable retail customers to leverage equity purchases up to a fixed percentage. The underlying debt is provided by the major money-center banks to securities brokers who mark up the price and end-loan to the consumer.
11. **Market Making (Equity Positions)**—The practice of buying and selling securities for a broker's own account from which it sells to or buys from its retail or institutional customers.
12. **Leveraged Leases**—A 100-percent financing system that combines borrowed equity and debt to enable a major utility or other capital equipment user to acquire functional access to resources without significant investment.
13. **Retail Banking**—The relationship between a parent and a subsidiary retail bank wherein the bank provides direct support to the products offered by the parent. An example would be ownership of a retail bank by a securities broker, as in the recent case of Dreyfus Corp.
14. **Middle and Institutional Market Lending**—Alternatives to funds offered by commercial banks for middle market and institutional market borrowings using the proceeds of public or private debt placements to make loans to these types of borrowers.
15. **Repurchase Agreements**—A contract between a seller (bank, thrift, credit union, securities broker, and others) and buyer of Federal Government or other securities, whereby the seller agrees to buy back the securities at an agreed-upon price after a stated period of time.
16. **Money Market Securities**—Private and Government obligations with a maturity of 1 year

or less. These include U.S. Treasury bills, bankers acceptances, large negotiable certificates of deposit (CDs), commercial paper, finance paper, and short-term tax exempts. The primary investment vehicle used by the money market funds offered by both depository institutions and securities dealers.

17. **Other Investment Funds:**
    a. **Money Market Fund**—A mutual fund that invests in short-term, highly liquid securities that pays the investor a market rate of interest and permits redemption by means of a variety of instruments that are convenient for the investor to use.
    b. **Real Estate**—Those funds concentrating their investments in real estate equities.
    c. **Liquidity**—Those funds concentrating their investments in cash or near-cash investments.
    d. **Growth**—Those funds concentrating their investments in speculative growth-oriented securities that will yield an increase in capital rather than a dividend return.
    e. **Municipal**—Funds concentrating their investments in securities of political subdivision of a State, including cities, counties, towns, villages, districts, and authorities, and designed to yield tax-sheltered income.
18. **Mortgage Lending**—The extension of credit secured by a lien on real property. At one point, the insurance industry was the single largest component of the home mortgage market. Today, that is not the case. Insurance companies are opting to concentrate on the large commercial property market because of increasing real estate values and opportunities to earn additional interest by participating in increases in rents as well as the secondary mortgage market. Others participate in the mortgage market by purchasing individual mortgages or packages of mortgages assembled and marketed by such organizations as the Federal Home Loan Mortgage Corporation (FREDDIE MAC) in secondary markets.
19. **CSVLI Loans**—Loans made against the cash surrender value of whole life insurance (CSVLI) policies, which by statute and by contract must be made at rates well below current market rates.
20. **Real Property Equities**—The taking of an equity position by a financial service provider as part of the compensation for advancing funds. A practice of insurance companies and others that, unlike depository institutions, are permitted to accept equity positions in real property in addition to debt instruments.
21. **Insurance Premium Financing**—Insurance companies can lend policyholders the money to finance their premiums over an extended period of time. This service is usually accompanied by an insurance services account.
22. **Actuarial Accruals**—The liability side of an insurance company's balance sheet includes the current period, actuarial accrual of many transaction products, and the mandated dividends on premiums paid for life insurance contracts.
23. **Annuities**—The principal liability product of insurance underwriters is the tax-deferred annuity, which only these industry members are able to offer with long-term guaranteed rates of return. Such annuities can be single-payment or multiple-payment plans and periodic or single pay out, or they can be structured to be payable to the surviving beneficiary only.

Transaction Products (Paper-Based)

24. **Cash Processing**—The service of providing central vault and central cash handling to banks, retailers, and other currency- and coin-dominated businesses.
25. **Payroll**—The process of using customer input to develop payroll checks for employees. The processor may also process the account debit to offset the credits for the checks, payroll taxes, and miscellaneous withholdings.
26. **Money Orders/Traveler's Checks**—Negotiable tender forms issued by depository and NDFIs in lieu of cash. Often wholesaled by major correspondents or third parties in "private label" formats.
27. **Mortgage Servicing**—Fee-based service wherein the needs of the mortgage investor are served by an intermediary that bills, collects, and accounts for mortgage payments. The process can also be incidental to an institution's normal lending activities. Compensation is derived through negotiated net settlement of collections—usually 3/8 to 1/2 of 1 percent.
28. **Bank-End Processing:**
    a. **Installment Loan Servicing**—Similar to mortgage loan servicing; however, no national market exists. Usually provided as a part of a total financial product servicing package.
    b. **Mortgage Loan Servicing**—Same as #27, above.

c. **Commercial Loan Servicing**—Process of servicing commercial loans that do not normally involve the serial payments found in installment loan servicing.
d. **Demand Deposit Accounting**—Process that accounts for the account debits and credits in a demand relationship with a bank.
e. **Savings Deposit Accounting**—Process that accounts for the account debits and credits in a savings relationship with a thrift institution, bank, or other depository financial institution that also handles the interest accrual and payment steps.
f. **Term Deposit Accounting**—Process that handles the accrual of interest on term savings relationships for banks, thrifts, and credit unions, as well as some NDFIs (securities brokers, insurance underwriters).
g. **General Ledger Control**—The accounting process for the internal recordkeeping for industry members usually provided by correspondents, third-party processors, and general accounting service providers. Banks also provide this service to their customers.
h. **Collateral Control**—A system for monitoring an institution's collateral under a loan. It usually entails a Management Information System (MIS), which may interface with the institution's general ledger.
i. **Cash Control**—A service much like cash processing, where central vault services are provided a part of a total back office service package.
j. **Trust Accounting**—A second-level accounting system for reconciliation of bank, thrift, and trust company customer accounts, as well as calculation of yield, return, and actuarial benefit.
k. **Item Processing**—The internal receiving, recording, and perhaps redistribution of checks, drafts, or other debit and credit items written by customers of an institution or deposited by its customers and drawn on another institution. This includes posting or recording of the check in the individual customer's account and the microfilming and balancing of all such items received.

29. **Wholesale/Retail Lockbox**—Also known as remote item processing or remittance processing. A banking service provided for the rapid collection of a customer's receivables and rapid credit to the customer's account. The service provided by the bank includes collecting mail from the company's post office box; sorting, totaling, and recording the payments; processing the items; and making the necessary bank deposit or forwarding the funds to another depository.

    The service can also be used by the institutions themselves to service their own loan portfolios. "Wholesale" refers to receivables flows that involve a few items with large dollar amounts per item. "Retail" refers to those flows with a large number of items and small per-item dollar amounts.
30. **Check Guarantee/Authorization**—The process of providing merchants and other vendors with assurance that a particular check being presented has the issuing bank's ability to pay behind it. In this mode, check guarantee/authorization should not be confused with the electronic-based procedures to be discussed later. This process generally involves a relationship between merchant and bank in contrast with electronic-based procedures which involve the use of third-party service.
31. **Securities Safekeeping**—Generally provided by banks to brokers or by banks to correspondent banks, this service insures that securities are maintained under dual custody. It can also have electronic applications when banks provide the service to their customers for paperless securities, such as Treasury bills and commercial paper.
32. **Personal Trust**—Services wherein financial institutions manage the assets of others for a fee. Wholesaling aspects involve correspondent relationships and trust companies as agents for financial institutions without the necessary infrastructure to support the activity.
33. **Escrow Accounting**—Services provided to escrow agents (title companies or attorneys in certain geographic areas) that enable the agency to maintain trust accounts and to report on the settlement of buyer and seller accounts.
34. **Note Collection**—Service wherein the financial institution acts as collecting agency for a customer on obligations owed by others to the customer. Historically, this service has been underpriced by banks and thrifts and frequently is being abandoned, owing to the heavy costs involved.
35. **Mortgage Banking**—The process of acting as an intermediary between the loan origination and funding systems. Generally, the mortgage banker will be equipped with the origination system and will tap national secondary mar-

kets for funding. In many cases, nondepository mortgage bankers will be supported with warehousing lines of credit from banks to facilitate timely funding of loans. These advances are ultimately repaid through filling of commitments with funds purchased in the open market. Three common secondary marketmakers exist—Federal National Mortgage Association, Government National Mortgage Association, and Federal Home Loan Mortgage Corporation. Securities brokers play a very active role in supporting this activity with their efforts to optimize investor returns by investing client funds in the debt and equity of these three agencies, as well as sponsoring their own real estate mortgage investment pools.

36. **Collection Service (Brokerage)**—The process of entering for collection the interest coupons of municipal, State, and Federal bond obligations (as well as certain non-Government debt securities) on behalf of others. This service, as in the case of note collections, was implicitly rather than explicitly priced for some time and is rapidly disappearing in many institutions. Frequent offerors include securities brokers, banks, and thrift institutions.
37. **Private Placement**—The business of selling the long-term debt or equity instruments of a client directly to one or more financial institutions without going to the public market.
38. **Equity Brokerage**—The trading of securities on behalf of a broker's clients either on one of the great number of securities exchanges or through an off-market transaction.
39. **Public Offering**—The process of taking a privately held company public through underwriting the new securities (guaranteeing a specific price) and then selling them to retail or institutional clients, or the process of offering additional stock or debt securities for an already public company. Requires that the securities be registered with the Securities and Exchange Commission and the offering be conducted in accordance with its regulations.
40. **Relocation Management**—A relatively new service of a few brokers, relocation management services assist the employees of corporate employers in their periodic job-related relocations by advancing the equity in owned real estate, thus brokering the sale of transferee's home and the purchase of another in the receiving city. As of December 31, 1982, Merrill Lynch had $430 million invested in equity purchases.
41. **Real Estate Brokerage**—Occurs when the brokerage community expands into real estate services through acquisition of existing real estate companies or renewed offerings of the services through existing securities brokerage offices.
42. **Securities Settlement**—The process of transferring title between buyers and sellers of securities within the 5-day limit. Involves delivering negotiable securities to the buyer, good funds to the seller and effecting a change in ownership on the books of the transfer agent.
43. **Annuities**—The amount payable according to contract annually or at other regular intervals for either a certain or an indefinite period, as for a stated number of years or for life. Several types of annuities exist, and in most cases brokers merely sell the annuity programs of a particular life insurance underwriter.

Transaction Products (Electronic-Based)

44. **Data Base Access**—These products require that the user be equipped with electronic hardware and attendant software to gather and manipulate data or to take action based on the data provided. There are essentially two types of data-based access products—passive and active. Passive products merely provide the user with information (e.g., account balances, airline schedules, stock prices). Active products enable the user to execute formatted transactions in conjunction with the information (transfer funds, book and pay for reservation, buy or sell securities, and settle payment).
45. **Branch Automation**—Those products designed to enable banks, thrift institutions, and NDFIs to increase productivity while reducing personnel costs through resource substitution.
    a. **Platform Automation**—The second step in the branch automation process is that of automating the functions of the administrative and loan platforms. In most cases, automation amounts to teller-terminal emulation with access to small customer information, word processing, and limited personal-computer data-manipulation functions. The loan authorization function is also provided in some cases.
    b. **ATMs**—Hardware and software that provide customer access to personal account information and transaction sets to conduct banking business. Machine configurations

range from full function to inquiry only to cash dispensing only.

c. **Teller Terminals**—These products enable banks, thrift institutions, and credit unions to address extract files and to perform teller functions against memo post files. Their functionality is generally limited to transactions involving demand deposit accounts (DDA) and savings types of accounts.

46. **Settlement and Clearing:**

a. **Settlement**—In interchange, the process of cardholder banks and merchant banks either paying by draft or drafting upon one another for payment of bank card transactions. A transfer of funds between two parties in cash or on the books of a mutual depository (e.g., the Federal Reserve Bank) for consummating one or more prior transactions made subject to final accounting. The conclusion of a transaction by completing all necessary documentation, making the necessary payments, and transferring title, where appropriate.

b. **Clearing**—A banking term referring to the inter-bank presentation of checks, the offsetting of counterclaims, and the settlement of resulting balances. The term may be used in a purely local operation or on a nationwide basis.

47. **Automated Clearing House/Electronic Clearing House**—A facility that performs intermember (financial institution§) clearing of paperless entries between such institutions. Most ACHs are operated by the Federal Reserve and use rules, procedures, and programs developed on a local basis by their participating financial institutions under the general direction of the National Automated Clearing House Association.

48. **Wire Transfer**—The process of moving customer money from one place to another without the transfer of paper documents by means of telecommunication between financial institutions. Larger banks have access to Federal facilities, while smaller institutions rely on their correspondent banks to perform the task. The important characteristics of wire transfer are speed and the secured nature of transmission.

49. **Cash Management**—A generic term for several discrete products designed to speed the collection of funds receivable and delay the disbursement of funds payable.

a. **Depository Transfer Checks**—Depository transfer checks (DTCs) are items processed through the payments systems and are preauthorized drafts on remote banks used for the purpose of concentrating cash in a single depository.

b. **Concentration Accounting**—The receiving end of the DTC system or other cash-gathering mechanism.

c. **Automated Investment Accounts**—Those cash concentration accounts that are preprogrammed to sweep balances in excess of a target amount into interest-earning accounts or investments on behalf of the customer—usually a commercial depositor.

d. **Cash Forecasting**—A service whereby a financial institution uses the cash receipts and disbursement journals of its customers to develop an analysis of that company's cash requirements for a given period. This enables the customer to invest the unneeded funds for future use.

50. **Business Banking Products**—The following products are generally offered by most banks to their corporate customers and rely heavily on electronics either for product delivery or facilitation.

a. **Account Reconciliation**—Customers provided either paper-based or electronic-based information on the checks they have written, which, when matched by the bank with those checks that have cleared, enable the bank and the customers to maintain a single cash balance journal.

b. **Account Consolidation**—The creation of multiple accounts that are actual subsets of a single account. The funds reside in one account, but statements are prepared for each subaccount. This is particularly attractive to customers with multiple-branch profit centers. The process requires additional MICR* encoding on each separate set of checks.

c. **Balance Availability Reporting**—Requires that a bank provide inter-day balance reporting as checks and deposits are made through a business day. This information is generally transmitted to a terminal in the customer's office.

d. **Balance Concentration/Sweep**—The receiving depository account for funds drawn off of subsidiary accounts and then invested in money market instruments.

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* MICR—Magnetic ink character recognition.

   e. **Automatic Customer Billing**—A software-driven product whereby the customer provides the bank with electronic-based data on its customers and the bank generates either paper or electronic debits or bills that are either mailed or processed through the ACH.
   f. **Deposit Reconciliation**—A service, similar to account reconciliation and account consolidation, that reconciles customers' deposits by branch or profit center.
   g. **Accounts Payable Check Writing**—In this service the bank uses a customer's accounts payable journal and discount information to prepare its checks to vendors. In many cases, this service is combined with a remote disbursement account located at another bank, usually in a city with no Federal Bank ACH.

51. **Point-of-Sale Systems**—A point-of-sale (POS) transaction is a full funds transfer that can be accomplished by electronically entering transaction data into an electronic payment network and transmitting the payment information to a data base in a depository institution's computer. POS systems serve many masters. Retailers use them to help control inventory levels, to assist in order management, and to authorize checks and credit and debit card purchases. More sophisticated systems are capable of gathering all data necessary for draft or check processing and enable banks to provide truncated services to cardholders or depositors. In all cases, POS systems reduce the steps, and therefore the time, required to process a transaction.
52. **Home Banking**—Though in its infancy, home banking is growing rapidly in popularity. The most common form of home banking today is telephone billpaying, which enables customers of banks, thrift institutions, and credit unions who have touchtone telephones to inquire about their balances, make account transfers, and pay certain household bills. This service has evolved from the marriage of telephone lines, television monitors, personal computers, and television cable into several pilot projects that enable the consumer to perform the aforementioned functions, as well as to inquire about other bank products, to budget household finances, and to reconcile bank statements. Some pilot projects also enable the consumer to make purchases from the home while settling on-the-spot through direct debit to a depository account or through a charge to a credit account.
53. **ATM Systems**—An unmanned electronic device that performs basic teller functions such as accepting deposits, advancing or withdrawing cash, relaying balance-inquiry information, and allowing transfer between a customer's account. The device is usually activated by a magnetically encoded card or by the transmission of a code via a keyboard or keyset. Such devices may be accessible 24 hours a day. The definition of an ATM system differs from the definition of ATMs under branch automation in that the ATM system may also involve credit authorization, check verification, draft data capture, and transaction processing.
54. **Comingled Investment Pools**—Enable banks to leverage their investment expertise to provide investment services to their customers directly or to other institutions on a correspondent basis. Generally, the product takes the form of employee benefit trust management, if provided to the public, and funds management, if done on a correspondent basis.
55 **Direct Debit**—Several industries rely on the direct debit to settle the purchase of goods or services. When the ACH concept is fully exploited, many more industries may take advantage of this process. One of the more visible uses of the direct electronic debit is the insurance settlement account (ISA) used by the insurance industry. For those policyholders who spread insurance premiums over time, the ISA offers the processing of preapproved charges to the policyholder's depository account at virtually any institution in the Nation. Mortgage bankers have begun using the direct debit, and it should not be long before other providers will also. Possible users include thrift institutions and major providers of consumer credit (e.g., General Motors Acceptance Corp. (GMAC), Beneficial Finance, and leasing companies).
56. **Funds Movement and Inquiry**—Generic terms for electronic-based cash management services, including funds transfer (wire-based) and access to data base information on the distribution of available funds (e.g., Where are they? Collected or uncollected? Investible?).
57. **International Banking Products**—These products are provided to enable the customers of banks and thrift institutions either to do business in the global market or to have access to funds while traveling worldwide.

a. **Letters of Credit**—Letters of credit (LCs) are evidence of financial institution's willingness to underwrite the dealings of its customers in arrangements where the customer is unknown to the seller of the product or in countries where the extension of trade credit to foreigners is forbidden (e.g., Japan). While the actual letter is paper-based, the advice and LC number is transmitted electronically through the banking network to the customer's seller (although the LC may be required by a buyer as a performance bond). Trade LCs will probably never be completely electronic because of the extra documentation required, such as bills of lading, port entry receipts, and insurance.

b. **Credit Inquiry**—Dealing in foreign trade requires that information be gathered on behalf of buyers or sellers, and banks have this capability through either their correspondent networks or through third parties.

c. **Foreign Exchange**—Bank customers who deal heavily in foreign trade must often settle in foreign currency, making it necessary to deal in the global currency markets. Banks themselves that are active in foreign lending frequently participate in the foreign exchange market to protect their positions against adverse currency exchange rates. Foreign travelers often need to use foreign currency that they can purchase in the United States prior to departing. Banks rely heavily on electronic messages to keep abreast of foreign money markets, not only for their own accounts but also for those of their customers.

d. **Draft Collection**—Involves processing drafts received or delivered under letters of credit and is a part of the international clearing process.

e. **Syndication**—Forming consortia of banks to provide credit and clearing services to real and quasi-governmental agencies of foreign nations as well as their nationalized and independent banks. International syndications provide offshore project finance. Usually the syndicating bank guarantees a borrowing or servicing cost and then negotiates downward from the determined rate with potential syndicate members, intending to reap a spread differential profit.

f. **Dollar Collection**—Involves the service of processing checks drawn on U.S. banks and presented to customers of foreign banks. This is a service of the international correspondent bank community and involves the settlement of cash letters. While the volume in cash letters is extremely high, the majority of cash and dollar settlement is done by a handful of the largest U.S. banks.

58. **Stock Transfer**—Banks act as the transfer agents for publicly held stocks. In this capacity they are required to process the changes of ownership of billions of shares each month. It is important that these institutions maintain a data base that provides ownership records to verify ownership, a service accessed by not only the corporation stock issuers but also the securities industry.
59. **Commercial Paper**—Short-term (270 days or less), unsecured promissory notes issued by businesses of significant financial strength or whose paper is backed by a letter of credit from a major bank. Brokers are merely one of two ways commercial paper is marketed. The major exception is Citicorp, which brokers its own commercial paper.
60. **Options/Futures**—Options are a tradeable right to buy or sell securities. Futures contracts are a legally binding agreement that call for the purchase or sale of a real or hypothetical commodity at a stated price and future point in time.
61. **Equity Brokerage**—The trading of securities on behalf of a broker's clients on one of the great number of stock exchanges.
62. **Index Funds Brokerage**—The selling funds whose yields are defined by specified stock indices such as Dow Jones Industrials, Standard and Poor's, and the Wilshire Index.
63. **Bond Brokerage**—The brokerage of debt instruments of strong corporations to clients.
64. **Fund Management**—The continual arrangement and rearrangement of the bank's balance sheet or that of any trust or fiduciary fund in an attempt to maximize profits, subject to having sufficient liquidity and making safe investments.
65. **Debit Cards**—A plastic card issued by a financial institution to its own customers that, by usage, credits or debits the customer's personal account (checking, savings, or line of credit). The card may be proprietary or it may be a regionally or nationally accepted card. With regard to the securities industry, debit cards are used to access funds on deposit in money market funds or to access lines of credit secured by securities portfolios or real property.

66. **Securities Settlement**—The process of transferring title between buyers and sellers of securities. This must be conducted within the 5-day limit.
67. **Discount Brokerage**—The provision of transaction services only, without the usual investment advice, for substantially reduced commissions.
68. **Securities Lending**—The process of lending securities for collateral purposes and short sales. These securities often end up as collateral for repurchase agreements.
69. **Certificates of Deposit Brokerage**—The offering to clients of investments in major bank and savings and loan negotiable certificates of deposit.
    a. **Straight**—Generally used to designate spot transactions.
    b. **Strip**—Instances where a group of CDs are sold together to match the maturities schedule of an underlying loan portfolio or a customer's future need for funds.
70. **Insurance Services Account**—The principal transaction product of the insurance industry is the insurance services account, which combines insurance premium financing with direct debit of policyholder's depository account in banks, thrifts, and credit unions. These debits can be paper- or electronic-based.

Information Services

71. **Cash Requirements Forecasting**—A system that uses financial institution customer data on receivables, payables, and capital spending to construct cash budgets and cash flow analyses that the customer can use to manage its receipts and disbursements more efficiently.
72. **Working Capital and Cash Flow Analysis**—A product tied to the cash requirements product which highlights the shortfalls and excesses of short-term assets minus short-term liabilities and expresses the same as a net negative or positive working capital position.
73. **Investment Return Optimization Analysis**—A product used by banks and their customers to evaluate alternative investment scenarios using a targeted internal rate of return as the primary algorithm. This product enables the banks and their customers to develop parallel views of customer investment requirements and ensures that the banks play an active role at the onset of the analysis rather than after the fact.
74. **Consumer Financial Analysis**—This new product uses the industry's control of the payments mechanism to assist consumers in household budgeting. It uses additional information provided by the customer on checks and deposit documents to organize payments and receipts data in a fashion that enables the consumer to visualize how the household budget is spent, i.e., residence, entertainment, food, utilities, tax-deductible items, and nontax-deductible items.
75. **Business Financial Analysis**—This new product works much like the consumer financial analysis product, using a business customer's check and deposit input to generate statements that reflect the prior period's cash basis profit and loss, and compares same against preestablished budgets.
76. **Debt Issue Rating and Quotation Services**—These information services are provided to major participants, who use them to guide their investment activities. Also included in the group are the equity rating and quotation services used by trust departments of banks and thrift institutions, as well as securities brokers, pension plan administrations, and insurance investment fund managers. The vast majority of these services are electronic-based and are provided by third parties.
77. **Credit Reporting Agencies**—These companies maintain large data bases on consumer and business credit histories and generate reports for subscribing members, who also provide current data on their credit consumers.

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